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The Canadian Oil Market is a new publication of the Department of Energy, Mines and Resources. It is designed to provide information on the oil market in Canada, including production, consumption, stocks, and prices. The publication is intended for use by government officials, industry, and the public.

THE CANADIAN OIL MARKET

OCTOBER 1985



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THE CANADIAN OIL MARKET

INTRODUCTION

This issue of *The Canadian Oil Market* is the first in a series that will report quarterly on developments in the oil industry. The first issue, published in January 1982, was devoted to an overview of the industry. This issue, published in July 1982, focuses on the supply, demand and pricing trends of crude oil in a deregulated Canadian marketplace. The following issues will examine and analyze the supply, demand and pricing trends of crude oil in a deregulated Canadian marketplace.

PREFACE

The Canadian Oil Market is a new publication of the Department of Energy, Mines and Resources. While this first issue takes an historical perspective of crude oil in a regulated market, future issues will examine and analyze the supply, demand and pricing trends of crude oil in a deregulated Canadian marketplace.

The publication has been launched on a trial basis. Response from readers will help to decide whether to continue, alter or discontinue it.

DOMESTIC DEMAND

Over the review period, demand for petroleum products in Canada fell at a compound annual rate of 1.2 per cent, reflecting a decline in demand for motor fuels and a rise in demand for industrial and commercial fuels. Although the rate of decline was slower than in the previous period, total consumption fell by 1.2 per cent, from 2.1 million barrels per day in 1980 to 2.0 million barrels per day in 1981.

Motor fuels accounted for 55 per cent of total consumption in 1981, down from 56 per cent in 1980. The decline in demand for motor fuels was due to a combination of factors, including a decline in the number of vehicles, a decline in the average number of miles driven per vehicle, and a decline in the average fuel economy of vehicles. The decline in demand for industrial and commercial fuels was due to a decline in the number of industrial and commercial establishments, a decline in the average number of employees per establishment, and a decline in the average fuel economy of industrial and commercial establishments.

The decline in demand for motor fuels was the largest factor in the decline in total consumption. The decline in demand for industrial and commercial fuels was the second largest factor. The decline in demand for other petroleum products was the smallest factor. The decline in demand for motor fuels was due to a combination of factors, including a decline in the number of vehicles, a decline in the average number of miles driven per vehicle, and a decline in the average fuel economy of vehicles. The decline in demand for industrial and commercial fuels was due to a decline in the number of industrial and commercial establishments, a decline in the average number of employees per establishment, and a decline in the average fuel economy of industrial and commercial establishments.

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THE CANADIAN OIL MARKET

INTRODUCTION

This issue of *The Canadian Oil Market* is the first in a series that will report quarterly on developments in Canadian oil supply and demand. Deregulation of the industry, effective June 1, 1985, means that responses to changing circumstances will be much more rapid in a market environment. These reports will highlight and distill the various events, forces and other influences that have affected the Canadian oil market, to help the reader interpret and understand market developments.

These reports are written for the informed layperson rather than for the industry specialist. They will focus on current developments in crude and oil product supply and demand.

The first issue is an historical summary of developments over the first five years of this decade. This will provide a framework for an appreciation of the status of the Canadian oil market prior to deregulation, an understanding of future developments, and a benchmark against which outcomes may be evaluated to provide a sharp focus. Only significant trends, highlights and turning points will be discussed. Although the operation of the Canadian crude oil market was regulated over the entire 1980-84 period, institutional factors are brought into the discussion only as required to understand significant developments.

DOMESTIC DEMAND

Over the review period, demand for petroleum products in Canada fell at a compound annual rate of more than 6 per cent, reflecting higher prices, substitution by alternative fuel sources, conservation measures and more efficient use of oil. Although the rate of decline in 1984 slowed to less than 1 per cent, total consumption at $214 \times 10^3 \text{m}^3/\text{d}^*$ represents only 78 per cent of the 1980 level.

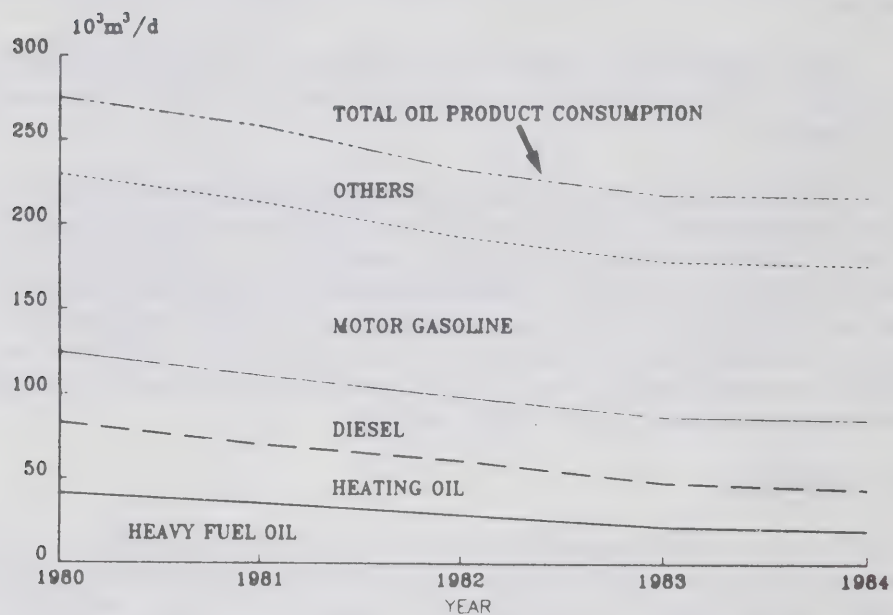
Among the products, heavy fuel oil consumption fell the sharpest (17 per cent annually) over the period, to less than half the 1980 level. Economic slowdown and conservation measures contributed to the reduction, but strong competition from alternative energy sources for industrial uses was the predominant cause of the lower consumption of heavy fuel oil.

Middle distillate sales also dropped fairly sharply over the period (6 per cent annually), but there was a major divergence in the rate of decline of the two main components of this category, diesel fuel and light fuel oil (home heating oil). Diesel consumption dropped by only 0.5 per cent over the period, and in the last two years it has recovered appreciably with the economic upturn and continuing move to diesel engines in the commercial-industrial sector. Light fuel oil sales, on the other hand, fell sharply (13 per cent annually) throughout the period, reflecting both conservation measures and the switch to alternative fuels.

* The units used in this report are the conventional SI units adopted in Canada for measuring oil flows in the upstream segment of the industry. For ease of understanding, the reader may substitute "millions of litres per day" for the expression $10^3 \text{m}^3/\text{d}$ in the text.

Motor gasoline sales also declined (4 per cent annually) over the period, but the rate of decrease tapered off in 1984. Although the stock of gasoline-powered motor vehicles rose, fleet efficiency also rose. This, combined with the conservation effects of higher gasoline prices and some switching to alternative fuels, reduced aggregate gasoline consumption.

OIL PRODUCT CONSUMPTION



The following table outlines the changes in the mix of main petroleum product consumption that have occurred over the last five years.

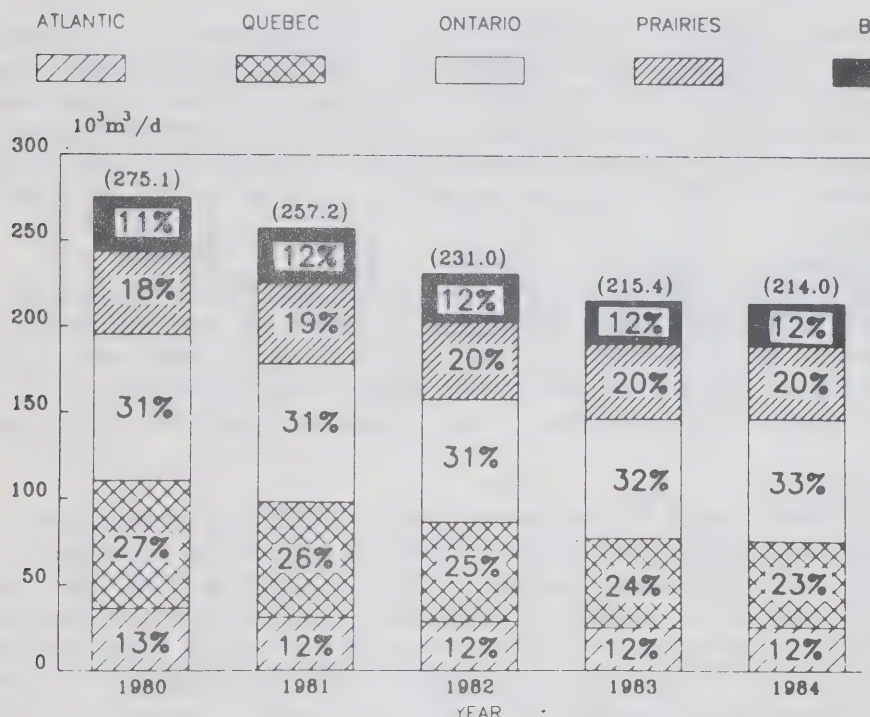
PERCENTAGE SHARE OF CONSUMPTION

	1980	1984
Motor Gasoline	38	42
Diesel Fuel	15	19
Heating Oil	15	11
Heavy Fuel Oil	15	9

On a regional basis, total oil consumption in Quebec dropped the most (10 per cent annually), reflecting in part the extension of the natural gas system east of Montreal and the strong competition from hydroelectric power for both new consumers and conversions.

The Atlantic Provinces' consumption was also down sharply (8 per cent annually). Given the lack of natural gas and the high power rates in that region, most of the reduction is attributed to more efficient use, some substitution (e.g., wood wastes) and the economic slowdown. The lower annual rates of decline in British Columbia and Ontario, 6 per cent and 4 per cent, respectively, and in the Prairies at 3 per cent, partly reflect the greater market penetration of natural gas in those areas prior to this period.

REGIONAL OIL PRODUCT CONSUMPTION



PRODUCIBILITY

The term producibility expresses the concept of full production deliverability under good reservoir engineering practice. Producibility changes with the depletion of already-discovered oil fields, the addition of new discoveries, and changes in the technology of oil recovery. The rate of oil discovery, and the development of recovery technology and its application are, of course, affected by economic factors such as price and fiscal terms applicable to the industry. Producibility is an estimate of what could be produced at any time, if all operations were operating at full capacity throughout the system.

In 1980 total Canadian producibility was estimated at $257.3 \times 10^3 \text{m}^3/\text{d}$, or about 94 per cent of total petroleum consumption in Canada. The principal component, then as now, was conventional light* and medium crude oil, which represented about 70 per cent of the total. This is the main feedstock for Canadian refineries. In 1980, it was expected that producibility of light and medium crude oil would decline at a rate of about 7 to 8 per cent annually. This raised concerns about

* Light refers to the density of the crude.

the security of future supply to Canadian refineries. In 1984, total Canadian producibility was estimated at $251.0 \times 10^3 \text{ m}^3/\text{d}$. Mainly because of a large decrease in demand over the last five years, producibility now represents more than 115 per cent of total Canadian petroleum product demand.

Although producibility of light crude did decline over the period, the rate was lower than forecast. By 1984 the decline had been reversed by a combination of discoveries, enhanced recovery projects, infill drilling and field extensions. As a result, the average annual rate of decline over the first half of the 1980s was only 2 per cent, and producibility of conventional light crude oil stood at $165.1 \times 10^3 \text{ m}^3/\text{d}$ in 1984 compared with $180.8 \times 10^3 \text{ m}^3/\text{d}$ in 1980.

Another significant Canadian refinery feedstock is synthetic crude, produced from the oil sands at two large plants, Syncrude and Suncor (previously Great Canadian Oil Sands) in Fort McMurray, Alberta. In 1980 the rated capacity of the two plants was $26 \times 10^3 \text{ m}^3/\text{d}$. Both plants use open-pit mining techniques to reach the oil-bearing sands. The bitumen is separated from the sand by heat and chemicals and then processed in a fully integrated upgrading plant to produce a light, sweet* synthetic crude oil.

Over the first half of the decade, no new synthetic productive capacity was added, other than some 'debottlenecking' in the two existing plants, so that productive capacity in 1984 stood at $28.6 \times 10^3 \text{ m}^3/\text{d}$, or 12 per cent of Canadian petroleum production. Several technical and operational difficulties in both plants over this period resulted in considerably less production than the rated capacity of the plants.

Condensate, which is recovered from natural gas production, is also a feedstock for Canadian refineries. When natural gas is processed, natural gas liquids such as ethane, butane, propane, pentanes (condensate) and heavier liquids are recovered. The propane and butane components are removed and the remaining condensate is sold as an equivalent of light crude oil and is used primarily as a feedstock for the manufacture of gasoline and petrochemical feedstocks. Condensate producibility is consequently directly related to the level of natural gas production and the proportion of liquids in the gas produced. In 1980 condensate producibility stood at $18.7 \times 10^3 \text{ m}^3/\text{d}$, or about 7 per cent of Canada's petroleum consumption. By 1985 it had declined to $14.6 \times 10^3 \text{ m}^3/\text{d}$, reflecting fairly stable gas production with a declining gas liquid content.

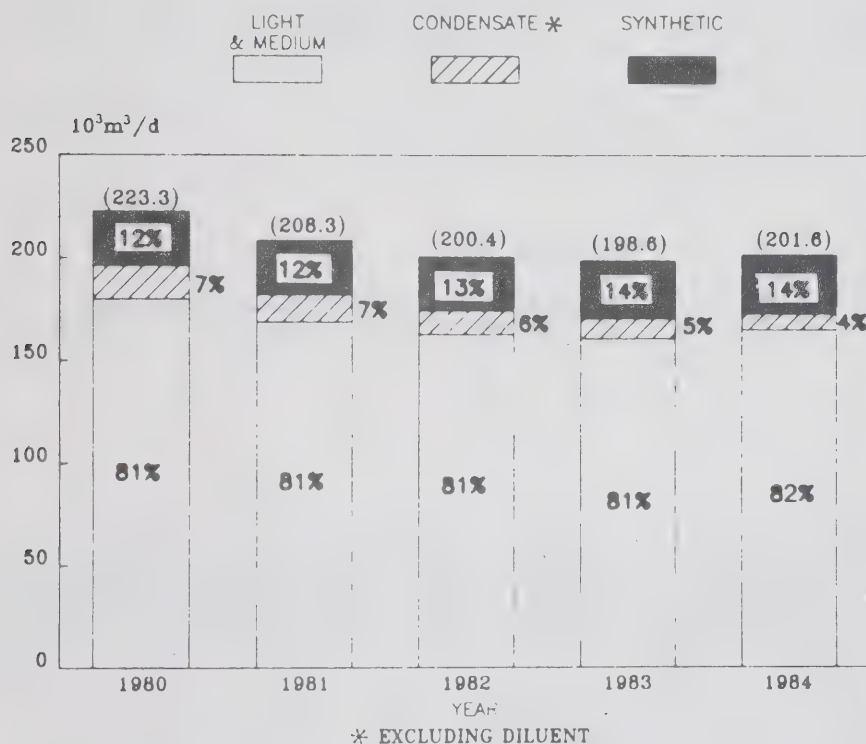
Another important and growing use for condensate has been as a diluent for very heavy crude oils, to make them transportable in pipelines. Other diluents are available but are generally more expensive than condensate. The use of condensate as diluent rose by almost 32 per cent annually from 1980, reaching $6.7 \times 10^3 \text{ m}^3/\text{d}$ in 1984. This reflects both the increase in heavy crude production and the rising proportion of lower quality heavy crudes.

Several alternatives are under evaluation to reduce or substitute for the growth in the use of condensate as a diluent, including partial upgrading of heavy crudes, blending with light crude oils and recycling, but these options are generally more expensive than using condensate.

* Sweet refers to a relatively low sulphur content.

Total producibility of conventional light crude oil and equivalent (synthetics and condensate other than diluent) fell from 223.3 $10^3\text{m}^3/\text{d}$ in 1980 to 201.6 $10^3\text{m}^3/\text{d}$ in 1984. However, in view of Canada's declining consumption of oil products, domestic producibility as a percentage of crude requirements rose from 74 per cent in 1980 to 89 per cent in 1984.

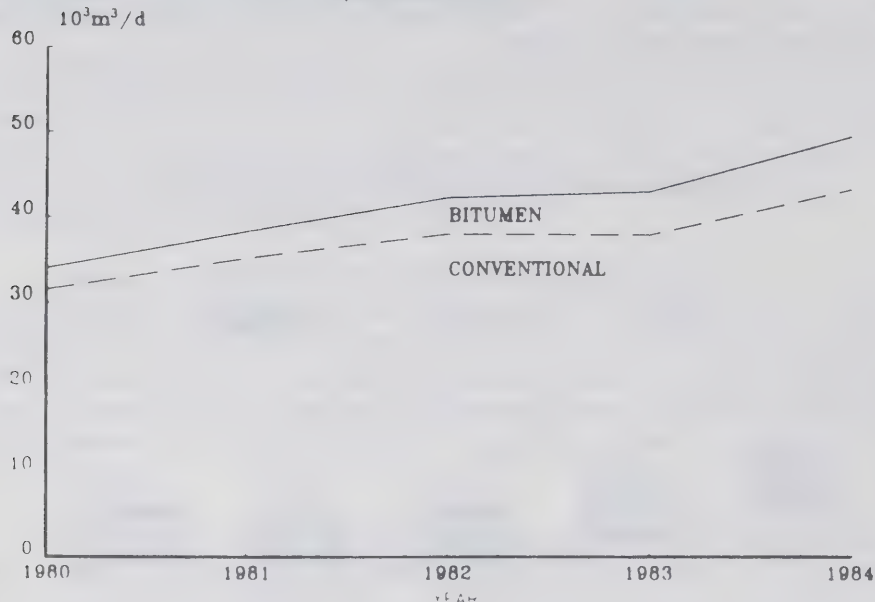
LIGHT CRUDE OIL PRODUCIBILITY



Heavy crude oil producibility, including diluent, rose more than 10 per cent annually over the period under review, reaching 49.4 $10^3\text{m}^3/\text{d}$ in 1984 (42.7 $10^3\text{m}^3/\text{d}$ of raw crude, 6.7 $10^3\text{m}^3/\text{d}$ of diluent). This compares with 1980 producibility of 34 $10^3\text{m}^3/\text{d}$. Although much of the increase is accounted for by bitumen projects, conventional heavy crude oil producibility also rose significantly as various recovery techniques were introduced in existing producing reservoirs. Given the size of the known heavy crude oil resource base, the potential for further increases in heavy crude oil producibility in Canada remains significant.

Industry has experimented with several in-situ recovery techniques to extract bitumen from the tar sands underground and many of these projects have come into or are now coming into commercial production. By 1984 raw bitumen accounted for 13 per cent of total heavy crude production, up from 8 per cent in 1980. In the absence of any further upgrading or processing, raw bitumen requires roughly one unit of condensate as diluent for every two units of bitumen moved through pipelines.

HEAVY CRUDE OIL PRODUCIBILITY (INCLUDING DILUENT)

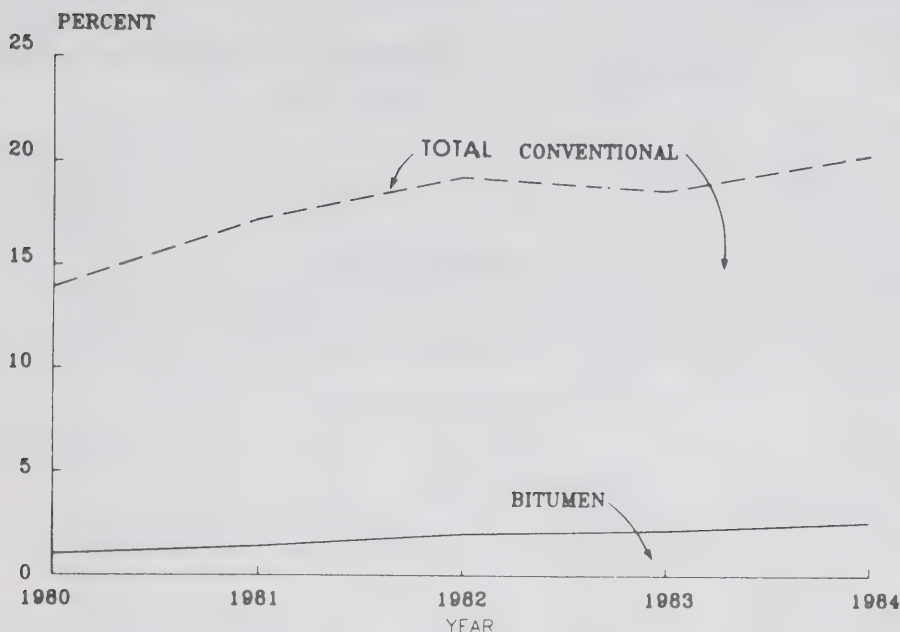


PRODUCTION

By 1984 production of crude oil in Canada, at $242.2 \times 10^3 \text{m}^3/\text{d}$, had recovered to almost the level of 1980, after bottoming in 1982. Conventional light crude, the predominant type, followed essentially the same trend, although the 1984 level of production was slightly less than that of 1980. Condensate production declined throughout the period. Considering the ever-growing diluent requirements, even less condensate was left for alternative uses. Based upon annual averages, output of the synthetic plants ran about three quarters of total capacity through the period.

Heavy crude production rose steadily throughout the period, reaching $49.4 \times 10^3 \text{m}^3/\text{d}$ in 1984 or about 20 per cent of total, up from about 14 per cent in 1980. Both conventional and bitumen heavy crude production contributed to the gain, but the average annual rate of increase in bitumen production was 25 per cent, although from a relatively low base.

HEAVY CRUDE OIL OUTPUT SHARES



Using annual production-to-productibility ratios as a measure of Canadian crude oil capacity utilization, performance ranged from a high of 96 per cent in 1984 to about 90 per cent in 1981 and 1982. Annual averages concealed a great deal of month-to-month variation in capacity utilization, ranging from periods in which wells produced at full capacity to periods in which lack of markets pushed utilization down to 70 per cent.

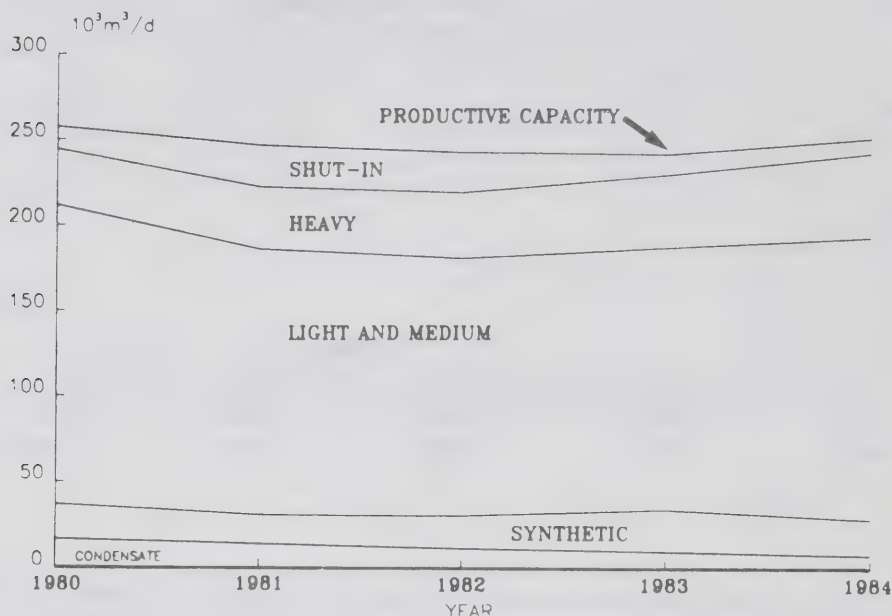
Under normal circumstances, it would be rare for any industry to run at 100 per cent capacity for any length of time; however, the capacity utilization measures can be used to compare performance at various times. The degree of unused or 'shut-in' productive capacity is the subject of the next section.

SHUT-IN

Unused productive capacity, or 'shut-in', represents forgone revenues and income. Any shut-in has an immediate impact, not only on company profits and cash-flow, but also on provincial and federal government revenues, to the detriment of future exploration and development of the resource base. Therefore, oil not produced today will normally be recovered from a reservoir over an extended period, and assuming no change in prices and fiscal terms, total return from the reservoir would be reduced.

Shut-in is also a measure of the degree to which current production could be increased on relatively short notice, provided that the transportation infrastructure is in place to handle the incremental output. Some periodic shut-in, for operational reasons, is difficult to avoid and has occurred regularly over the past five years.

AVAILABLE SUPPLY OF WESTERN CANADIAN CRUDE OIL AND EQUIVALENT



Heavy crude shut-in is particularly costly because production cannot be easily turned on and off without expensive well start-up problems. Over the period under review, heavy crude shut-in ranged from a high of $4 \times 10^3 \text{ m}^3/\text{d}$ in 1982 to negligible amounts in 1984, despite ever-increasing producibility. The export market provides an important outlet for the incremental production, which Canadian refineries are unable to utilize. The U.S. highway reconstruction program, which has increased the demand for asphalt, is an important factor contributing to the relatively low shut-in during the last few years. Some U.S. refineries are also much better equipped to refine heavier crude oils, as long as heavy crude prices remain competitive relative to those for light crude oil. Competitive export pricing vis-à-vis offshore competition made it possible to increase the Canadian heavy crude market share in the United States substantially over this period.

Most synthetic production was eligible for the equivalent of world oil prices throughout the period under review and there was an agreement with governments that synthetic production would not be subject to prorationing during periods of surplus capacity. However, synthetic crude plants have rarely operated at full capacity for extended periods, even if the rated capacity is adjusted for normal maintenance and repair down-time. Over the past five years, unused capacity averaged about 25 per cent of rated capacity, which might be considered an operational shut-in. The best year operationally occurred in 1983, when unused capacity averaged about 10 per cent.

Light crude oil shut-in peaked in 1981 and 1982 at roughly $13 \times 10^3 \text{ m}^3/\text{d}$ (8 per cent of light crude productive capacity) as a result of provincially imposed production restraints in 1981, and inadequate domestic markets in 1982. As discussed earlier, domestic markets for petroleum were declining sharply in the early 1980s. At the same time, rigorous light crude export controls were in place, preventing excess productive capacity from moving to the export market.

To reduce light crude shut-in to the very low level achieved in 1984 ($1 \times 10^3 \text{ m}^3/\text{d}$, or less than 1 per cent of productive capacity), several means were used. Direct crude imports were displaced by subsidizing the movement of Canadian crude oil to refineries east of Montreal and by restricting imports of offshore spot-priced crude oil. Exports of refined products from refineries based on domestic crude were encouraged by competitive export pricing, to maintain refinery capacity utilization in the face of declining domestic demand and the shut-in. Lastly, exports of light crude oil, which had been almost totally phased out by the National Energy Board in 1980, resumed in 1983.

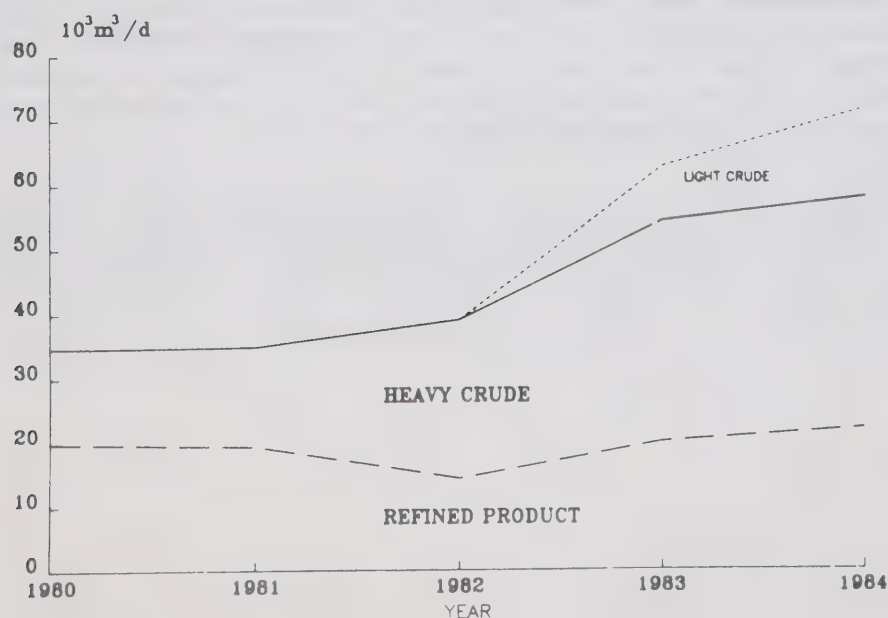
FOREIGN TRADE

Exports provided producers with the means to market surplus productive capacity, thereby maintaining cash flow and economic activity.

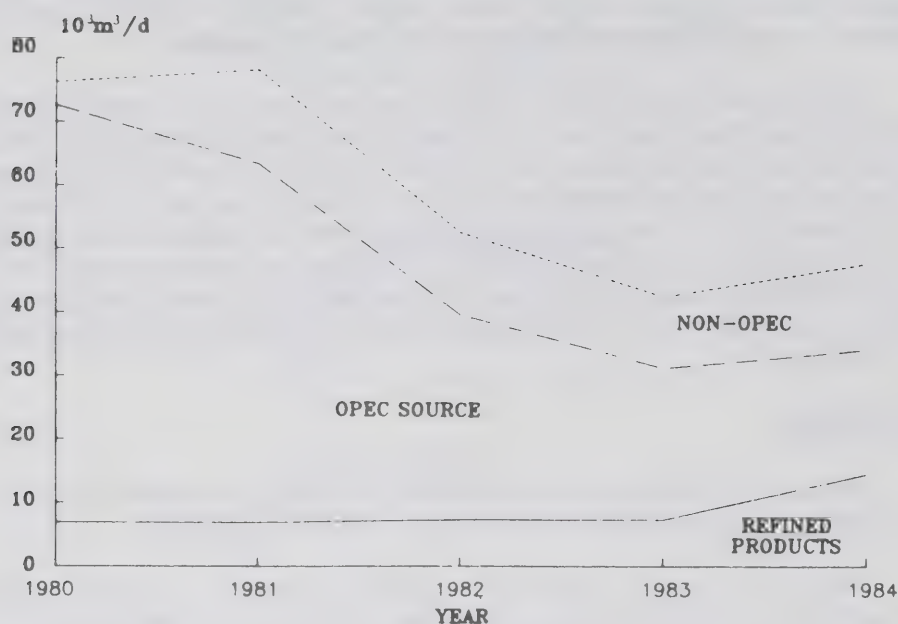
Exports of heavy crude oil (including diluent) more than doubled over the five-year period, to $36 \times 10^3 \text{ m}^3/\text{d}$. This level of exports represented 73 per cent of heavy crude oil producibility in 1984. Canadian refineries absorbed only $13 \times 10^3 \text{ m}^3/\text{d}$ of Canadian heavy crude oil in 1984, compared with almost $20 \times 10^3 \text{ m}^3/\text{d}$ in 1980, because of declining product demand and displacement by offshore crude.

Light crude oil exports recommenced in 1983 and rose to almost $14 \times 10^3 \text{ m}^3/\text{d}$ in 1984, or 7 per cent of light crude oil output. In total, crude oil exports in 1984 were almost $50 \times 10^3 \text{ m}^3/\text{d}$, representing 21 per cent of total production and a 35 per cent compound annual increase from the 1980 level.

OIL EXPORTS



OIL IMPORTS

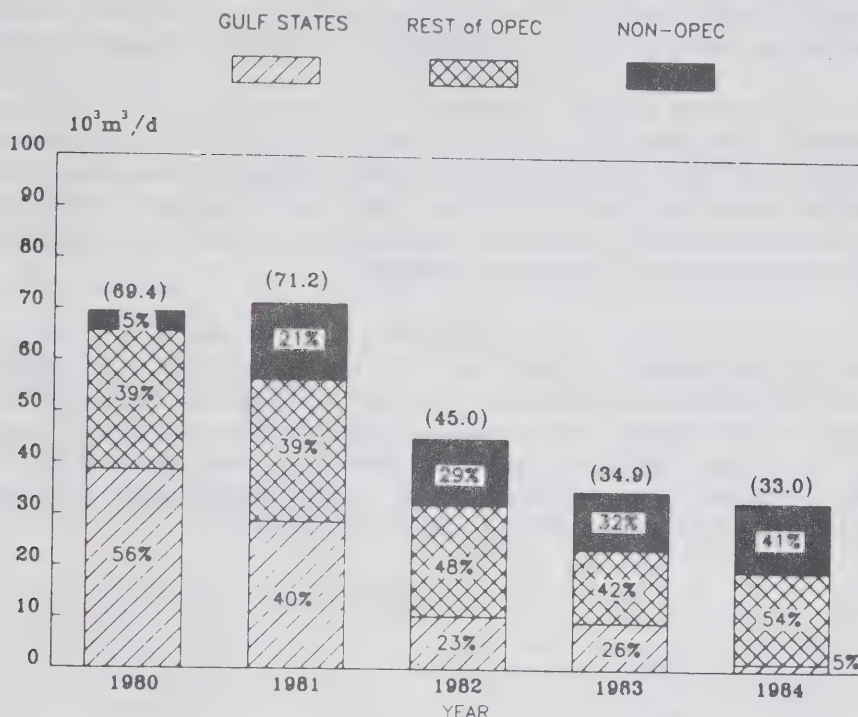


Crude oil imports, which were cut by more than half over the period under review, amounted to $33 \times 10^3\text{m}^3/\text{d}$ in 1984, or about 15 per cent of total Canadian oil consumption. This is a significant reduction from 1980, when imports were $69 \times 10^3\text{m}^3/\text{d}$, or 25 per cent of Canadian oil consumption.

Over this period, there was also a major shift in the sources of the crude oil imported. In 1980 non-OPEC countries (Mexico and North Sea) accounted for only 5 per cent of Canada's crude oil imports ($3.6 \times 10^3\text{m}^3/\text{d}$). By 1984 imports from these areas had risen to more than $13 \times 10^3\text{m}^3/\text{d}$ and represented 41 per cent of Canada's total crude oil imports. The OPEC share fell accordingly, to less than $20 \times 10^3\text{m}^3/\text{d}$ in 1984. Moreover, imports from the Gulf area, which amounted to almost $39 \times 10^3\text{m}^3/\text{d}$ in 1980, or about 56 per cent of total crude oil imports, had been reduced to just over $1 \times 10^3\text{m}^3/\text{d}$, only 5 per cent of crude imports.

The reduction was the combined result of displacement of offshore oil by Canadian crude, the total drop in oil consumption in Canada, and in 1984 in particular, a sharp increase in refined product imports. Depressed offshore product prices made imports very attractive relative to refining crude oil in 1984. As a result, product imports in 1984 were $14.4 \times 10^3\text{m}^3/\text{d}$, about double the level from 1980 through 1982.

SOURCES OF DIRECT CRUDE OIL IMPORTS



Product exports, on the other hand, remained relatively flat, reaching $22.1 \times 10^3 \text{ m}^3/\text{d}$ in 1984. There was one interesting development. Exports of oil products made from domestic crude oil increased, while product exports from Quebec and Atlantic Canada, both largely served by imported crude oil, declined. Throughout 1980-84, Canada remained a net refined product exporter, although the surplus was reduced from 13 to $7.7 \times 10^3 \text{ m}^3/\text{d}$ in 1984.

Product imports and exports will remain an important factor in alleviating supply-demand imbalances and in their impact on Canadian refinery utilization and efficiency. Subsequent reports will monitor and report on this area in particular.

If we compare oil imports with exports over the five-year review period, Canada swung from a net oil import position in 1980 of $41.4 \times 10^3 \text{ m}^3/\text{d}$, about 15 per cent of total consumption, to a net export position of $24.4 \times 10^3 \text{ m}^3/\text{d}$, including crude oil and products. In dollar terms, this is a swing from a net outflow of \$2.6 billion in 1980 to a net inflow of \$1.7 billion in 1984. This was achieved through reduced consumption, higher producibility and less restrictive export controls.

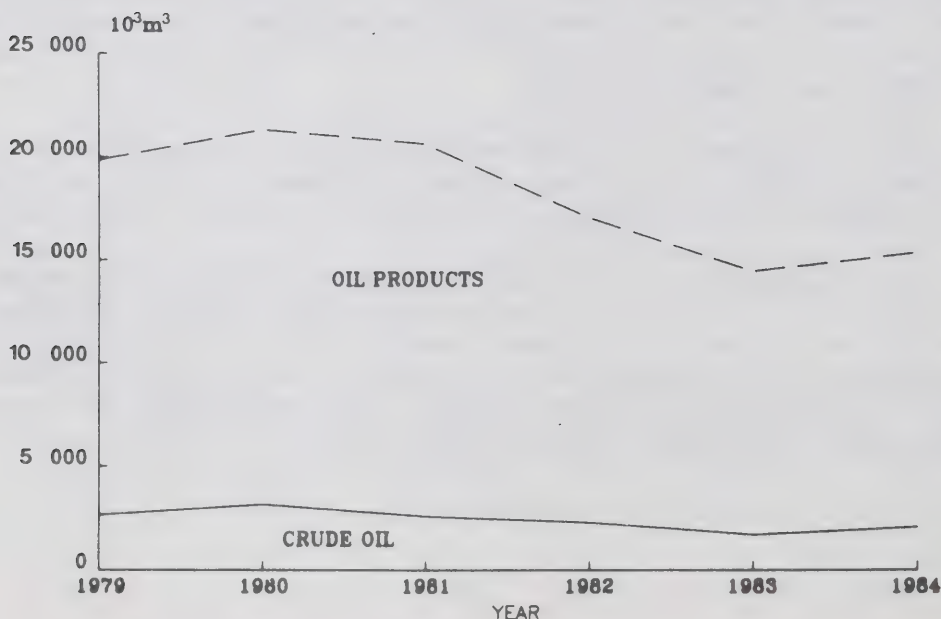
INVENTORIES

Changes in oil inventories are another important factor in explaining crude oil supply-demand developments. Companies generally try to maintain minimum stocks of both crude oil and refined products, consistent with efficient operation of refineries and meeting customer product delivery requirements.

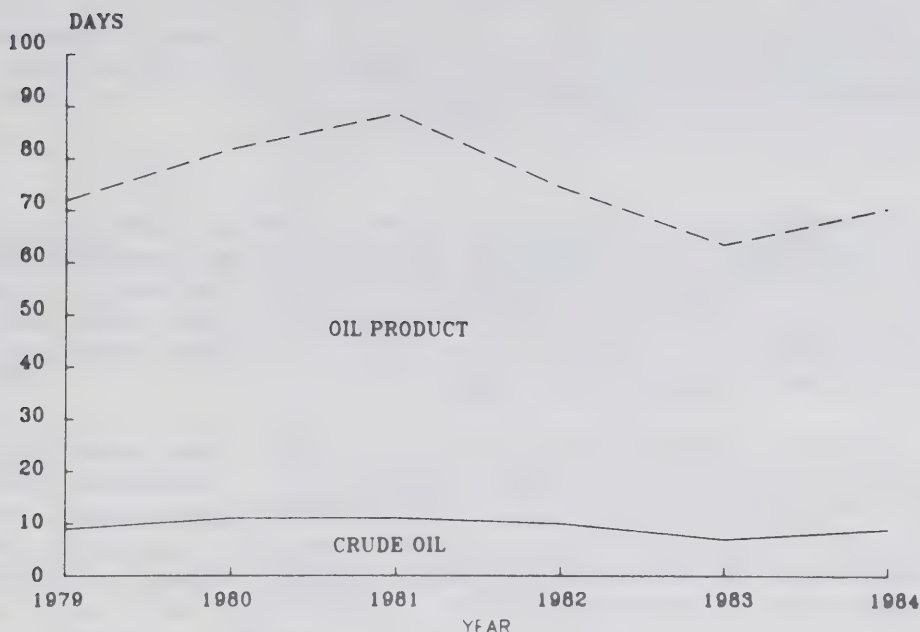
Over the period under review, the volume of oil held in inventory was reduced by about 25 per cent. Part of this reduction can be attributed to refinery closures but there was also apparently a major change in inventory management practices. Higher crude and product prices resulted in higher inventory carrying costs. As part of the efforts to reduce costs, inventories were reduced to lower levels through rationalization and tighter controls.

The effect in 1982 was significant, and inventories were reduced by $9.5 \times 10^3 \text{ m}^3/\text{d}$, or approximately 4 per cent of total petroleum consumption. This performance was followed by a similar reduction in 1983 of $7.2 \times 10^3 \text{ m}^3/\text{d}$, or more than 3 per cent of oil consumed. At the end of 1984 total inventories of crude oil and products were $15 \times 10^6 \text{ m}^3$, compared with $21 \times 10^6 \text{ m}^3$ at the end of 1980. However, because of falling demand, the reduction in days of forward supply was considerably more modest: from 83 days at the end of 1980 to 72 days.

OIL INVENTORIES (CLOSING STOCKS)



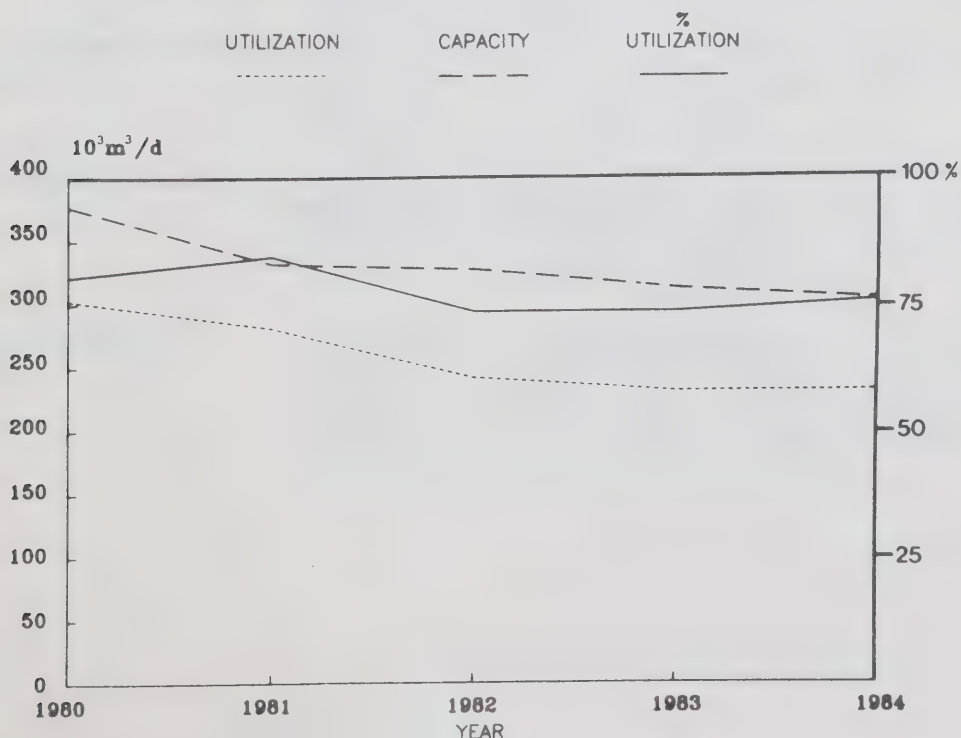
OIL INVENTORIES (Expressed in days supply)



REFINING CAPACITY AND UTILIZATION

Changes in refining capacities can have a significant impact on crude flows in Canada and across the border. From 1980 to 1984 total refining capacity was reduced by $65 \times 10^3 \text{ m}^3/\text{d}$, or almost 18 per cent. However, there was also an important regional shift. While B.C. refining capacity remained constant, that of the Prairies jumped by almost $20 \times 10^3 \text{ m}^3/\text{d}$ on a net basis, and eastern Canadian refining capacity dropped by $85 \times 10^3 \text{ m}^3/\text{d}$, almost 30 per cent over five years. These dramatic shifts over a relatively short period were necessitated by changes in consumption patterns and aggregate reductions in the level of petroleum consumption in Canada.

REFINING CAPACITIES AND UTILIZATION



Despite the refinery closures over the period, the rate of refining capacity utilization in 1984 averaged 76 per cent, still below the 1980 rate of 80 per cent. Moreover, unless refinery utilization can be improved, further refinery rationalization could be required. These developments will continue to be the focus of monitoring and discussion in future reports.

PRICES

Throughout the period under review, crude oil prices in Canada were regulated. Nevertheless, they continued to rise and this factor is important in explaining the decline in product consumption. In 1984, the average refinery crude cost had more than doubled, to \$224/m³, from the level in 1980. Both wellhead price increases and refinery gate charges used to pay for imports and incentives to new oil production contributed to this total increase.

Average refined product prices (before downstream taxes) increased by a corresponding amount in absolute terms (about 12 to 15 cents/L), reflecting the higher crude costs. In addition, the various downstream taxes imposed, particularly on transportation fuels, resulted in even higher pump price increases. From 1982 through 1984, the rapid decline in petroleum product consumption led refiners to compete aggressively for market share by cutting prices. As a result, consumers witnessed price wars in different parts of the country, sometimes lasting for extended periods. In some cases, the extent of the retail price fluctuations exceeded all of the crude price increases that occurred over the period. As surplus refining and marketing capacity was closed and rationalized, the price wars continued with diminished intensity. Another factor explaining this development was that in 1984 the rate of decline in petroleum consumption levelled off to less than 1 per cent.

Future reports will cover price movements in greater detail, since both crude and refined product prices will be determined by market forces.

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Glossary of Terms

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In-situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oils with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.
Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Glossary of Terms
(continued)

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

The Canadian Oil Market Questionnaire

The goal of *The Canadian Oil Market* is to provide useful, timely and well-written information on the oil market in Canada. The Department of Energy, Mines and Resources would like to hear your thoughts on the publication.

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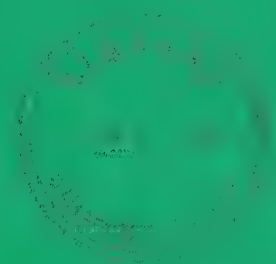
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The Canadian Oil Market

February 1986



Canada

THE CANADIAN OIL MARKET

FEBRUARY 1986

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THE CANADIAN OIL MARKET

INTRODUCTION

This issue of *The Canadian Oil Market* is the second in a series that will report quarterly on developments in Canadian oil supply and demand. Although these reports are intended to focus on current developments in crude and oil product supply and demand, the first two issues diverge somewhat from this objective. The first issue provided a five-year historical perspective of the first half of the decade. This issue reports on the first three quarters of 1985. Future issues are expected to focus on only one quarter.

The period under review in this issue was a time of considerable change in Canada's oil industry. The Western Accord was announced at the end of March, having been in negotiation for some time. Before the June 1, 1985 deregulation date, there was a period of transition to and preparation of market-based systems to replace the regulated pricing system. The months following deregulation were a period of adjustment and refinement of the structures that were put in place and the creation or re-establishment of relationships in the marketplace that had been allowed to disappear or weaken.

In the meantime, the international oil market continued to evolve. This, along with changes occurring elsewhere in the Canadian economy, affected the Canadian oil market. The market-based structures and relationships will continue to evolve and be refined, but most of the required changes have been implemented.

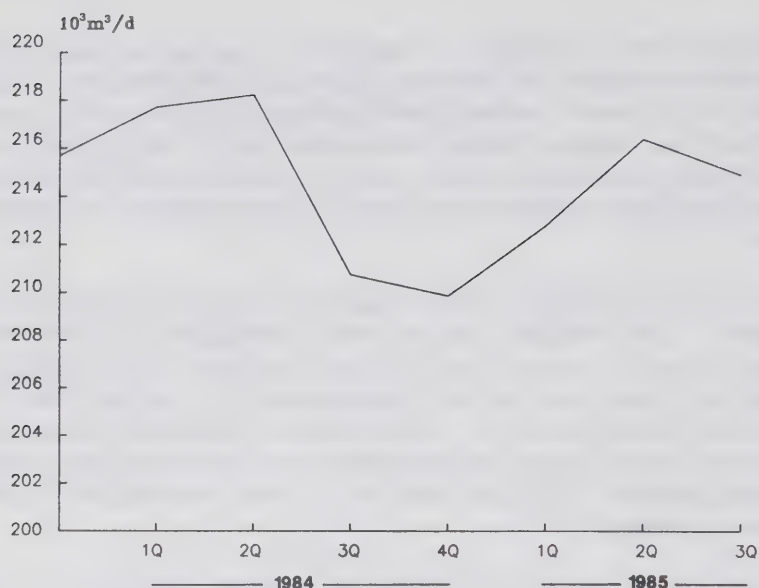
DOMESTIC DEMAND

After several years of fairly rapid declines, indications were that Canadian oil consumption may have finally bottomed, if not reversed. Over the first three quarters of 1985, domestic oil demand was almost $211 \times 10^3 \text{ m}^3/\text{d}^*$, down less than 1 per cent from the same period of 1984. During the first half of 1985, total oil product demand dropped by more than 1 per cent from the same period a year earlier, but during the third quarter demand grew by 2 per cent. Moreover, on a seasonally adjusted basis, there was some recovery in the first three quarters of 1985 from an historically low point, the fourth quarter of 1984. It is too early to tell, but there are some grounds for relating the growth to the upswing in the economy. This impact was offset by individual consumers and companies continuing to use energy more efficiently and substituting other forms of energy for hydrocarbons, because of oil prices.

Among oil products, gasoline and diesel fuel sales rose about 1 per cent in the first three quarters, reflecting higher demand for transportation fuels as the economy improves. It is interesting to note that the rate of economic growth exceeded the growth rate for transportation fuels by a ratio of about 3 to 1. This may indicate that the continuing replacement of older motor vehicles with newer, more fuel-efficient ones partly offset the greater use of vehicles for transportation.

* The units used in this report are the conventional SI units adopted in Canada for measuring oil flows in the upstream segment of the industry. The reader may wish to substitute "millions of litres per day" for the expression $10^3 \text{ m}^3/\text{d}$ in the text.

TOTAL OIL PRODUCT CONSUMPTION
(SEASONALLY ADJUSTED)



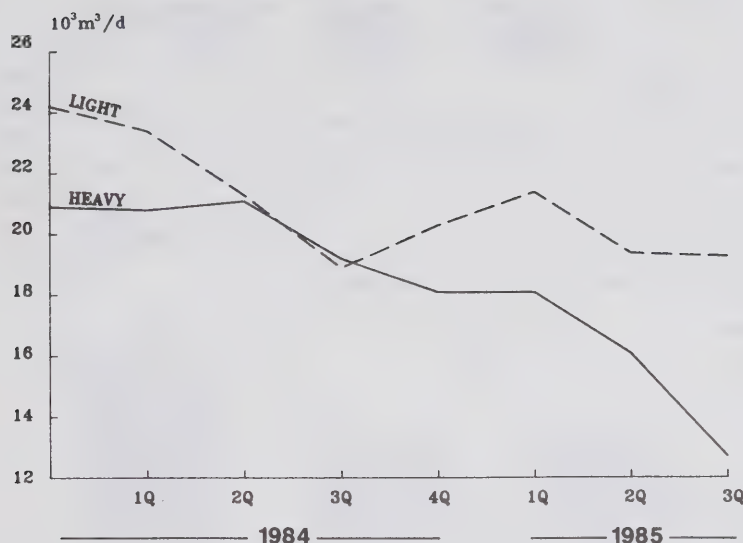
Consumption of fuels for air transport also rose sharply, by 8 per cent, during the first three quarters of 1985, despite the introduction of more fuel-efficient aircraft. (These products are grouped in the 'other' category on the accompanying graph, since they account for only about 5 per cent of total consumption.) This was consistent with economic recovery, which was reflected in additional passenger and freight flights.

Demand for both light and heavy fuel oil continued to decline over the first three quarters of 1985, down 5 per cent and 22 per cent, respectively, from the same period of 1984. Much of the drop can be explained by the continued swing to alternative fuels for space heating, particularly in the residential and commercial sectors. The more drastic decrease in heavy fuel oil consumption also reflected the lagging recovery in 1985 of the forestry and mineral sectors, which traditionally have been significant consumers of heavy fuel oil. The rate of decline in heavy fuel oil consumption accelerated over the course of the year, but this may have been because large industrial consumers drew upon their inventories, anticipating lower heavy fuel oil prices in the summer of 1985.

On a seasonally adjusted basis, the rate of decline of light fuel oil consumption appeared to level off in 1985. After the jump in the first quarter, partly because of colder than normal temperatures, the pattern for the year was relatively flat. Heavy fuel oil consumption, on the other hand, dropped even faster than the relatively rapid declines of recent years.

The only area that grew strongly was the area called other products, which represented roughly 20 per cent of refined products. As mentioned, aviation fuels in this category were up 8 per cent in 1985. Similarly, petrochemical feedstocks and asphalt consumption rose by about 20 per cent, reflecting stronger industrial demand for materials. This category can be expected to continue to grow in line with economic recovery.

FUEL OIL CONSUMPTION (SEASONALLY ADJUSTED)



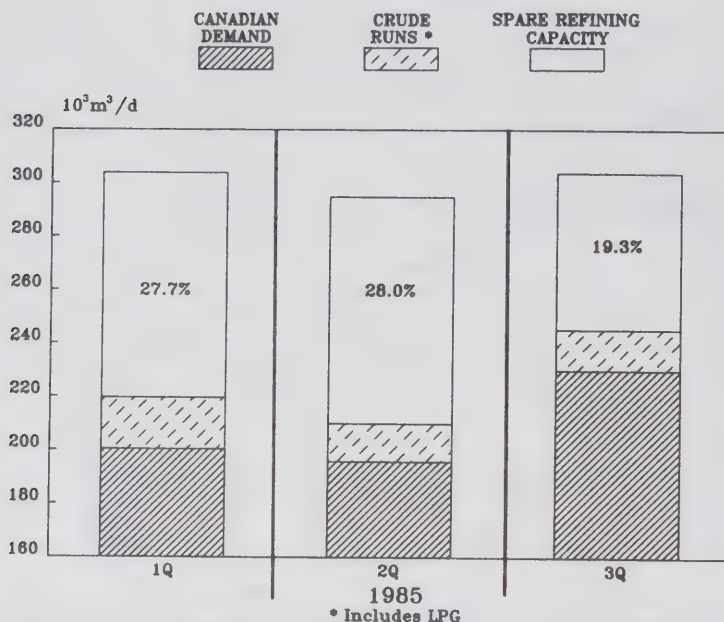
On a regional basis, demand in Ontario and the Prairies in 1985 was relatively strong: up 2 and 4 per cent, respectively. Although the Prairies' demand began strongly in the first quarter, it tapered off subsequently. In Ontario, on the other hand, demand in the first quarter was less than in the same quarter of 1984, but rallied and accelerated in subsequent quarters. Demand in the Atlantic region fell almost 2 per cent over the period, remaining relatively flat during the first quarter and then dropping off. British Columbia and Quebec consumption were both down more than 5 per cent over the period, reflecting the sluggish resource economy in the former province and the continuing substitution of electricity and gas in the latter.

REFINERY UTILIZATION

The divergent trends in regional consumption and product use are a challenge to the industry. At the same time they provide an opportunity for the industry to correct supply and demand imbalances through interregional and international trade and through efficient management of refineries. Given an aggregate refining capacity of approximately $300 \times 10^3 \text{ m}^3/\text{d}$, refiners decided to distill approximately $220 \times 10^3 \text{ m}^3/\text{d}$ of crude oil feedstocks during the first half of the year and to increase this to $245 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter, the first full quarter of deregulated operations. Consequently, less than 75 per cent of Canada's refining capacity was used during the first half of the year, and a little over 80 per cent in the third quarter. At these rates, refineries are operating inefficiently and can be expected to seek ways of improving their performance. If short-term measures, such as higher exports, building inventories for future markets and displacing imports are ineffective, some refinery capacity will probably be closed. Indeed, in August, Gulf Canada Limited announced that it would be closing its Montreal East refinery during the fourth quarter. Its capacity, at roughly $12 \times 10^3 \text{ m}^3/\text{d}$, is about 4 per cent of current refining capacity in Canada.

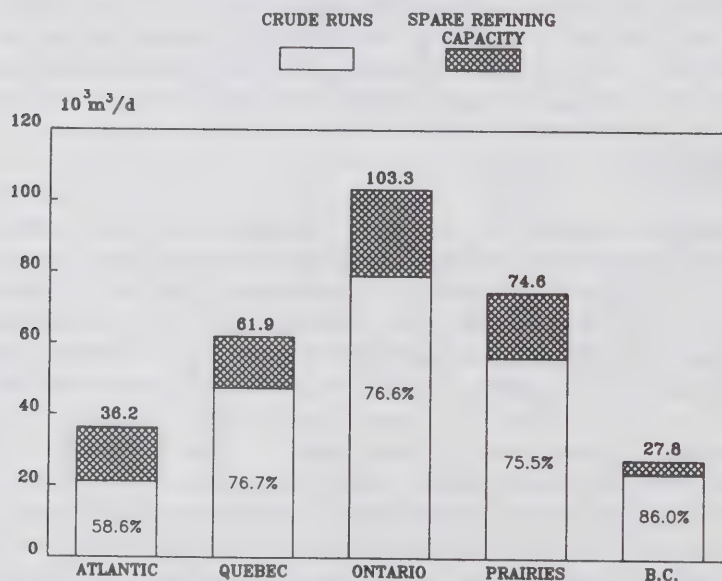
Canadian refinery capacity over the first three quarters of 1985 was better utilized in the western regions than in the east, averaging 76 per cent for the country.

REFINERY UTILIZATION



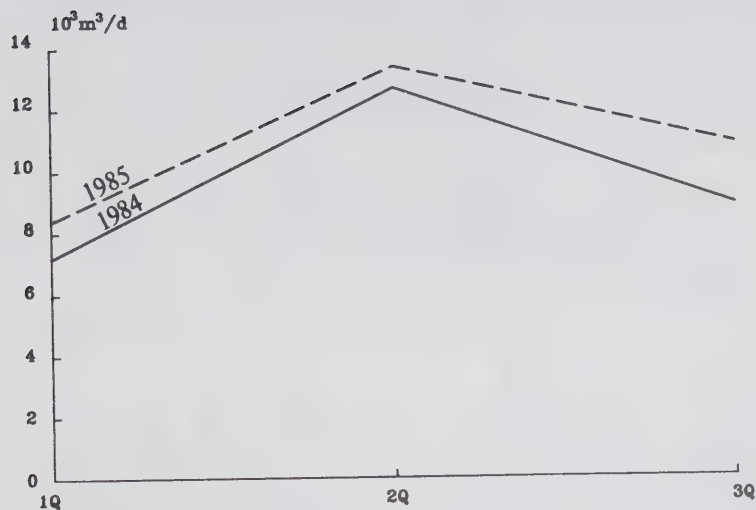
REGIONAL REFINERY UTILIZATION

Jan. - Sept. 1985

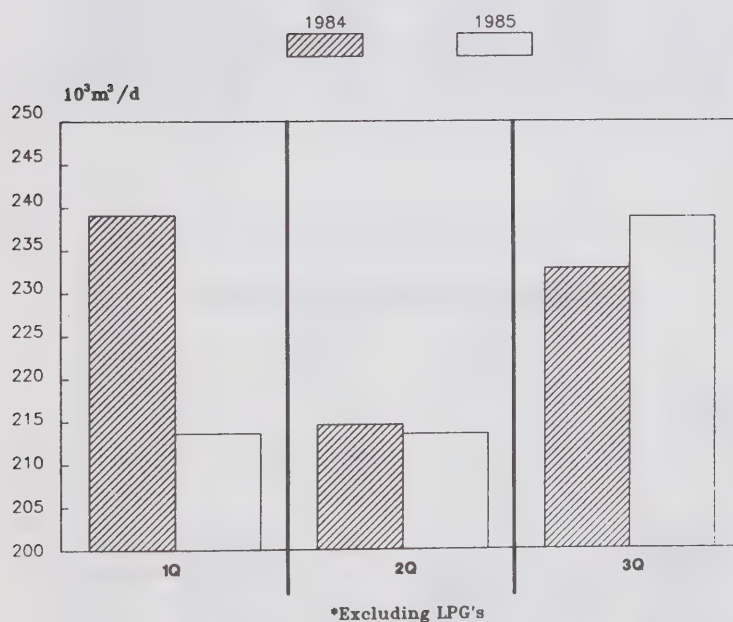


Refiners also managed to increase their refinery utilization and to alleviate supply and demand imbalances through refined product exports and imports. Canada was a net product exporter of almost 11 10³ m³/d over the first three quarters of 1985, but this level was only marginally above that for the same period of 1984 (10 10³ m³/d), and the quarters showed little difference from one year to the other. Net product exports did, however, contribute almost 4 percentage points to the rate of refinery utilization throughout the three quarters.

NET PRODUCT EXPORTS



CRUDE RUNS*



*Excluding LPG's

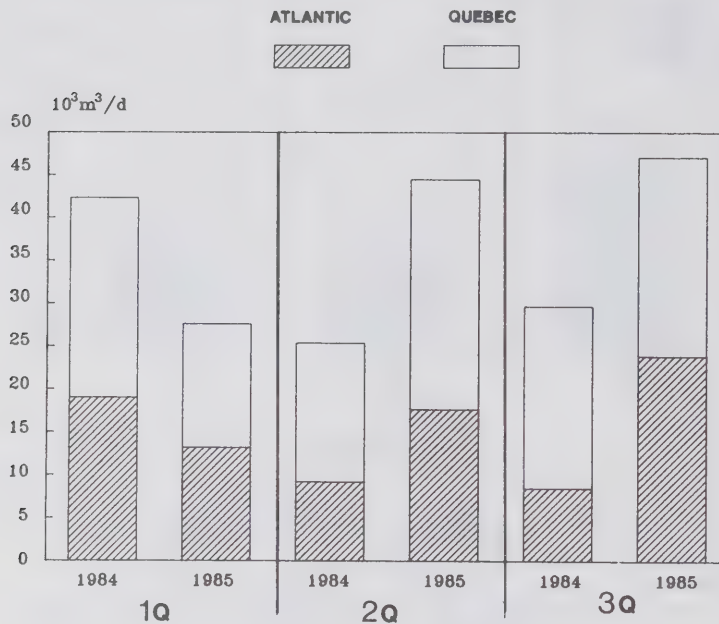
Third-quarter 1985 crude runs increased over the first half of the year, apparently mainly because of higher demand than in the previous quarter, and better product inventory management.

CRUDE OIL REQUIREMENTS

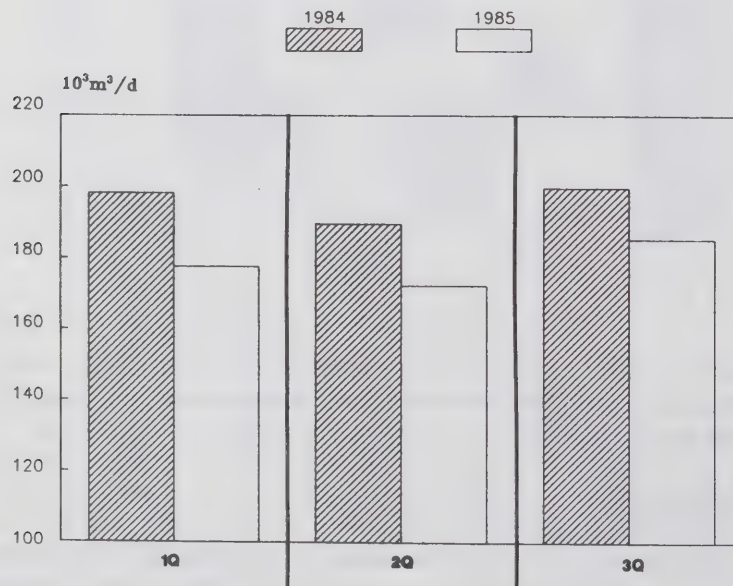
Demand for crude oil fell less than 1 per cent during the first three quarters, but crude runs to distilleries decreased more than 2 per cent over the same

period. The difference, as discussed previously, was met by an overall reduction in inventories in the system. Most of the difference was focused on the first quarter of the year. In fact the first-quarter runs of 1985 were almost as low as normal second-quarter levels, which is not typical. As a result, crude requirements fell by $5.6 \times 10^3 \text{ m}^3/\text{d}$ (2.4 per cent) to $228 \times 10^3 \text{ m}^3/\text{d}$ in the first three quarters of 1985.

CRUDE OIL IMPORTS



CANADIAN CRUDE OIL RECEIPTS



About 22 per cent of the crude oil received at Canadian refineries over this period was imported, compared with 14 per cent over the same period of 1984. Most of the $7 \times 10^3 \text{m}^3/\text{d}$ increase in crude oil imports, to almost $40 \times 10^3 \text{m}^3/\text{d}$, was accounted for by the ending of the Atlantic crude oil transfer subsidy program, which assisted the movement of Canadian crude oil to refineries east of Montreal. Although the program was officially terminated with deregulation, the volumes involved had started to decline earlier in anticipation of this event. During the first three quarters of 1984, more than $12 \times 10^3 \text{m}^3/\text{d}$ moved to eastern refiners under the program. Over the same period of 1985, the volume was cut by half, to $6 \times 10^3 \text{m}^3/\text{d}$.

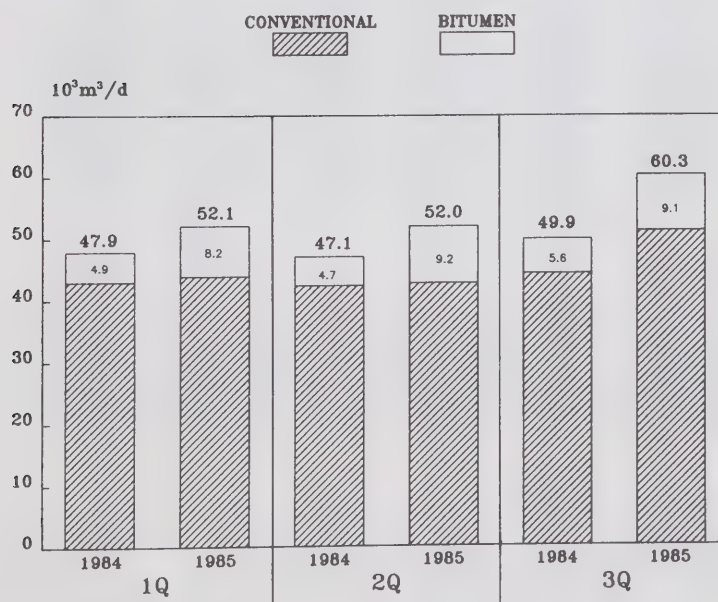
With crude requirements down over this period and imports higher, domestic crude receipts fell more than proportionately, by 9 per cent, to $178.4 \times 10^3 \text{m}^3/\text{d}$ on average. The pattern changed very little from one year to the next.

PRODUCIBILITY

While domestic requirements for Canadian crude oil were falling, the capacity to produce crude oil and equivalent (producibility) continued to increase over the period, by more than $18 \times 10^3 \text{m}^3/\text{d}$ (7.4 per cent) from 1984. About one third of this increase ($6 \times 10^3 \text{m}^3/\text{d}$) was accounted for by heavy crude oil (including diluent), representing an 11.8 per cent increase in producibility over the same period of 1984. The increases continued throughout the period, and appear to have accelerated since deregulation. Bitumen projects and conventional heavy crude oil recovery projects have contributed to the increase in heavy crude producibility.

Conventional light crude oil producibility also rose about $6 \times 10^3 \text{m}^3/\text{d}$, a growth rate of only 3.5 per cent. Nevertheless, the growth was remarkable since many experts had been forecasting declines of 7 to 10 per cent over this period, based

HEAVY CRUDE PRODUCIBILITY (INCLUDING DILUENT)

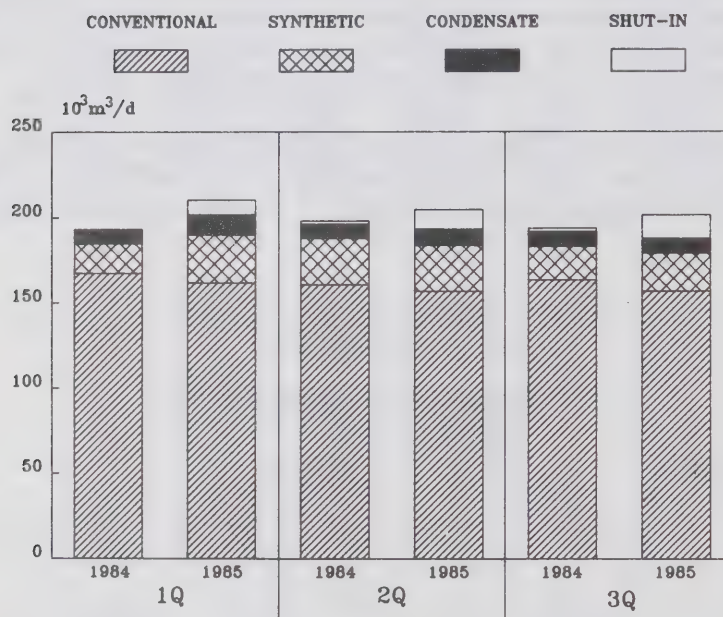


on the natural decline of the reservoirs and the lack of significant new discoveries. The expected decline was offset by some small discoveries, infill drilling in producing reservoirs and tertiary recovery projects that enhanced recovery from producing reservoirs.

About half of the increase in light crude oil producibility can be attributed to the start-up in the first quarter of the Norman Wells project pipeline, which runs from the Northwest Territories to Alberta. For decades this project has produced crude oil for local consumption, but the pipeline connected it to the Alberta pipeline system, allowing it to expand production for southern, as well as local, needs.

Over the first three quarters of 1985, the Syncrude and Suncor synthetic oil plants in northern Alberta produced almost $26 \times 10^3 \text{m}^3/\text{d}$, up 20 per cent ($4.3 \times 10^3 \text{m}^3/\text{d}$) from the same period of 1984. This level of performance in 1985 represented about 95 per cent of the plants' design capacities, which accounts for lost time due to regular repairs and maintenance.

LIGHT CRUDE OIL PRODUCIBILITY



The availability of condensate, produced as a byproduct in natural gas treatment plants, rose 8 per cent over the first three quarters, to $15.7 \times 10^3 \text{m}^3/\text{d}$. This increase reflected higher natural gas production levels associated with greater export volumes.

To summarize, the producibility of all categories of Canadian crude oil and equivalent increased by 7.8 per cent to $260 \times 10^3 \text{m}^3/\text{d}$ over the first three quarters of 1985, and Canadian requirements for domestic crude oil fell by 9 per cent to $178 \times 10^3 \text{m}^3/\text{d}$, leaving a potential surplus of $82 \times 10^3 \text{m}^3/\text{d}$, almost one third of total producibility.

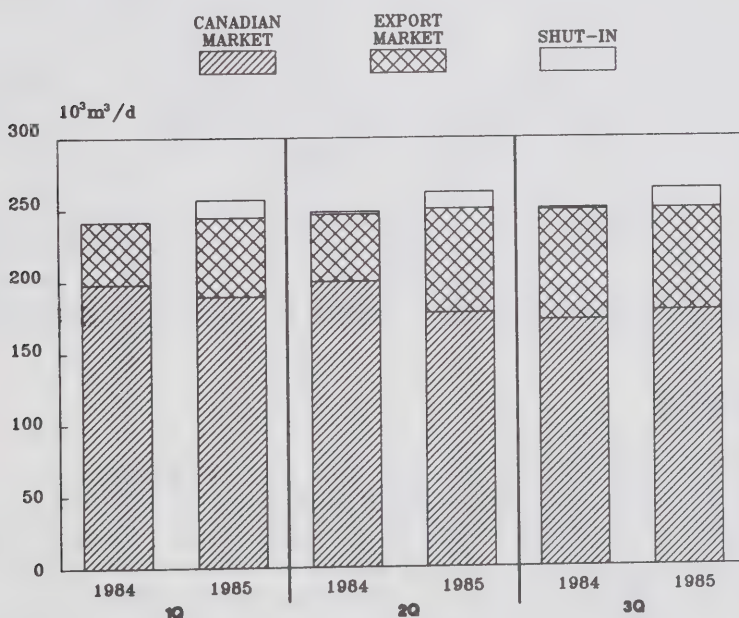
PRODUCTION AND SHUT-IN

Total crude oil and equivalent production increased by 3 per cent over the period to $248 \text{ } 10^3 \text{ m}^3/\text{d}$, leaving $12 \text{ } 10^3 \text{ m}^3/\text{d}$ of the potential surplus shut in the ground; that is, about 5 per cent of total producibility was not utilized. Over the same period in 1984 shut-in was $1 \text{ } 10^3 \text{ m}^3/\text{d}$, or less than 1 per cent of productive capacity. The part of the potential surplus that was not shut in was exported. Exports rose 53 per cent over this period to $72 \text{ } 10^3 \text{ m}^3/\text{d}^*$. Although shut-in potential was higher in 1985 than in 1984, production was also consistently higher, and the export market increased in importance relative to the domestic market.

In line with producibility, heavy crude oil production rose by 10 per cent over the first three quarters of 1985, reaching $46.5 \text{ } 10^3 \text{ m}^3/\text{d}$. Another $6.2 \text{ } 10^3 \text{ m}^3/\text{d}$ of condensate was required as diluent to make the heavy crude transportable by pipeline, yielding almost $53 \text{ } 10^3 \text{ m}^3/\text{d}$ of heavy crude oil for disposition. Of this total, almost 75 per cent was exported, up from 72 per cent in 1984. Aside from the first two months of the year, virtually no heavy crude oil was shut in over the period.

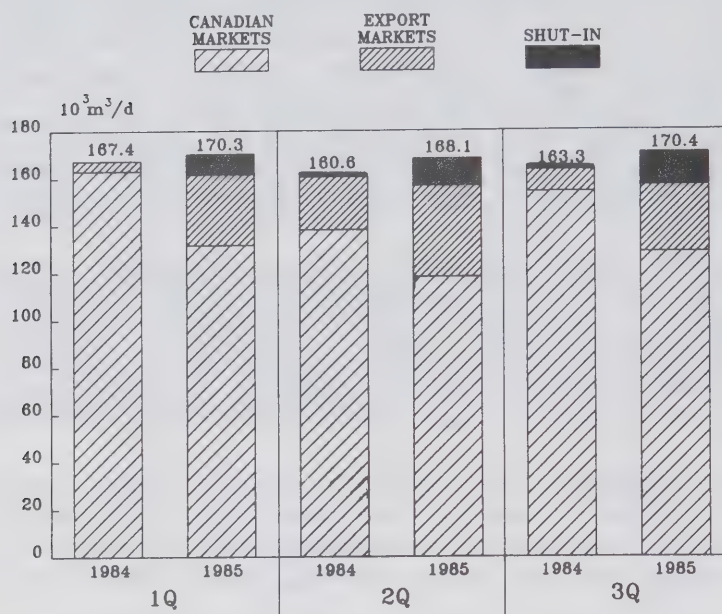
There was relatively more shut-in productive capacity of light crude oil, however, averaging $11 \text{ } 10^3 \text{ m}^3/\text{d}$ over the first three quarters, or almost 6 per cent of light crude oil productive capacity. Exports accounted for another $32 \text{ } 10^3 \text{ m}^3/\text{d}$, or about 16 per cent of light crude oil productive capacity, up from $12 \text{ } 10^3 \text{ m}^3/\text{d}$ in 1984,

DISPOSITION OF TOTAL CRUDE OIL PRODUCIBILITY



* The sum of exports and shut-in does not quite equal the total potential surplus because of rounding and pipeline inventory fluctuations.

ALLOCATION OF LIGHT CRUDE OIL PRODUCTIVE CAPACITY



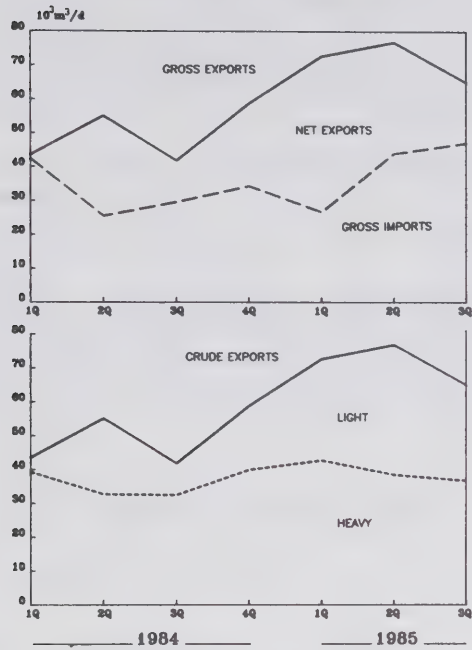
which was about 6 per cent of capacity. This pattern changed somewhat over the course of the year. In the first quarter, some shut-in was caused partly by lack of pipeline capacity, whereas during the second and third quarters, the shut-in was related to marketing difficulties. The domestic market was reduced by the elimination of the Atlantic transfer program and productive capacity remained strong. Crude prices in export markets were soft during the second and third quarters, making it somewhat difficult to market incremental export volumes. Deregulation resulted in some minor adjustment problems, as the industry completely took over crude oil marketing. The Alberta prorationing scheme was utilized to restrict production to the level of expected markets, but the system had difficulty reacting quickly enough to market developments. At the end of the third quarter, some adjustments were introduced on a trial basis to make the system more market-responsive in the fourth quarter.

EXPORTS AND IMPORTS

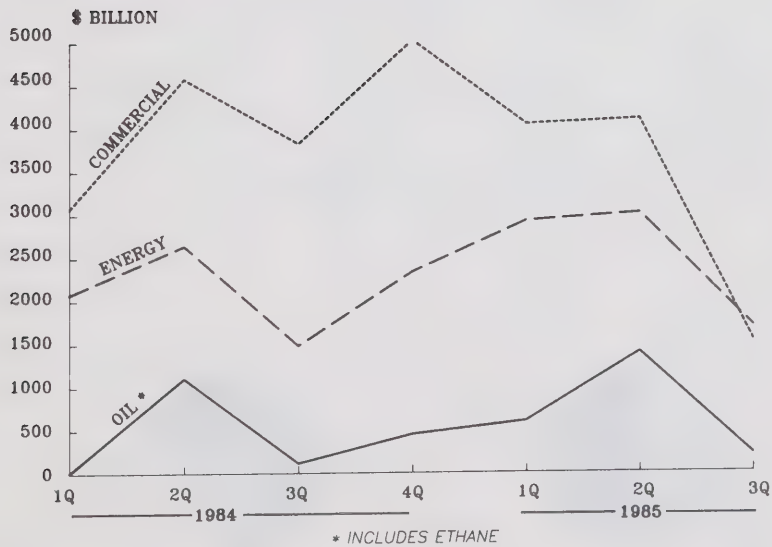
Both exports and imports of crude oil increased significantly during the first three quarters of 1985, although exports increased by 53 per cent, more than twice the growth rate of imports, which was 23 per cent. Canada's net crude oil export position widened considerably. Light crude oil exports apparently represented much of the growth in total crude exports. Furthermore, Canada was a net product exporter throughout 1984 and 1985, further widening the balance in Canada's favour.

In net terms, oil made an important contribution to Canada's trade and energy surplus. During the first three quarters of 1985, the oil trade balance rose \$1 billion over that for the same period of 1984, which represented about two thirds of the \$1.5 billion improvement in the energy trade balance. At the same time, the merchandise trade balance deteriorated by almost \$1.8 billion.

CRUDE OIL EXPORTS-IMPORTS



OIL AND ENERGY TRADE BALANCE (QUARTERLY)

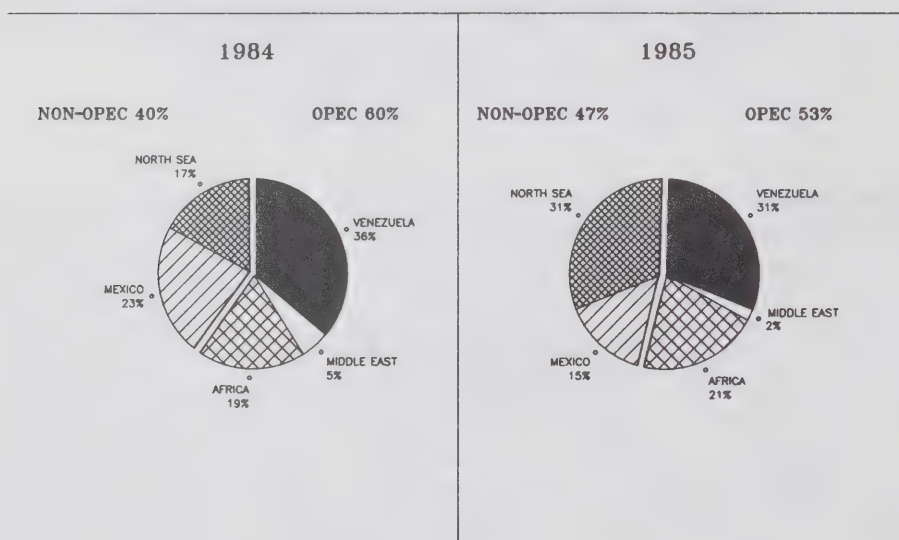


SOURCES OF CRUDE OIL IMPORTS

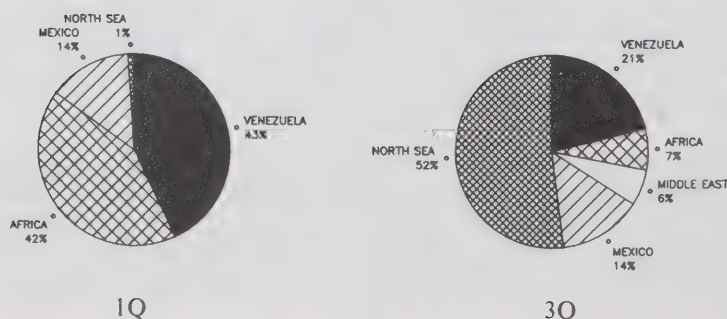
During the first three quarters of 1985, the sources of Canadian crude oil imports were roughly half OPEC and half non-OPEC, a ratio of 47:53. This compared with 60:40 for the same period of 1984. Total imports from OPEC were roughly equal ($19 \times 10^3 \text{ m}^3/\text{d}$) in both periods. Imports from non-OPEC sources rose by almost $8 \times 10^3 \text{ m}^3/\text{d}$ to $21 \times 10^3 \text{ m}^3/\text{d}$, reducing OPEC's share accordingly.

Import sources shifted noticeably in 1985. In the first quarter OPEC countries provided 85 per cent of Canadian crude oil imports, split almost equally between Africa and Venezuela. Of the non-OPEC imports, Mexico provided 14 per cent and the North Sea less than 1 per cent. By the third quarter, however, the North Sea was providing more than half of the imported crude. With Mexico still providing 14 per cent, Canada's imports from non-OPEC countries rose to 66 per cent. Venezuela and Africa had dropped to 21 per cent and 7 per cent, respectively, and the Middle East picked up 6 per cent, so that one third of the imported crude came from OPEC countries.

IMPORT MARKET SHARES



IMPORT MARKET SHARES 1985



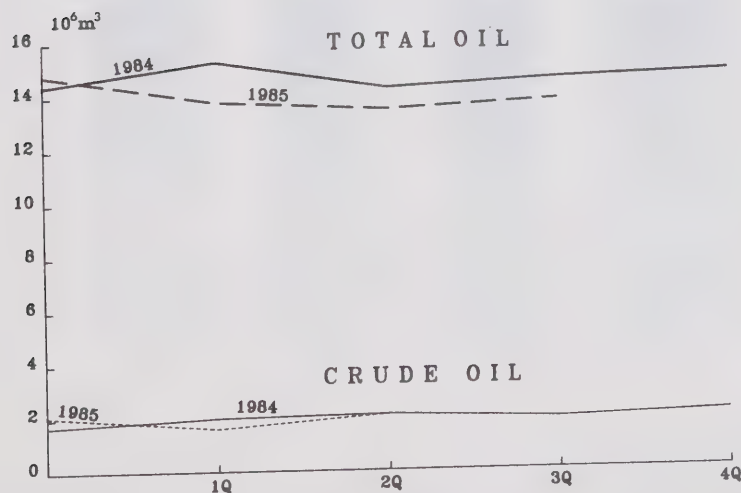
This shift in import sources over the three quarters was partly caused by deregulation. The Mexican share remained constant because most of the imports from that country in 1985 continued to be made under the Canada-Mexico trade agreement. There were some new imports from the Middle East during the third quarter, presumably at favourable prices. The North Sea crudes that replaced imports from Africa and Venezuela are normally priced to compete on the U.S. Gulf Coast and thereby have a slight freight cost advantage over African and Latin American crudes. North Sea crudes are actively traded on the 'spot' market, which makes them attractive for meeting short-term supply requirements when the market is unstable.

INVENTORIES

During the first three quarters of 1985, Canada's crude oil and product inventories were drawn down by about $1500 \times 10^3 \text{m}^3$, about seven days' supply. This drawdown continued the trend that has lasted for a few years as inventories have been managed more efficiently to match lower consumption levels. The Canadian refining and marketing industry, along with its counterparts in the rest of the industrialized world, seemed to have drawn down inventories in anticipation of lower prices after the OPEC summit at the end of the summer. Although Canadian stocks did not reach critical levels, there was some concern that supplies might be tighter than usual this winter in some areas of the country.

In 1985, crude oil inventory management by Canadian refiners did not seem to change significantly from the previous year. Inventories were reduced somewhat from levels carried a year earlier at the end of the first quarter, partly because space for transporting Canadian crude on the Interprovincial Pipeline system was difficult to obtain and refineries had to rely on stocks. By the end of the second quarter of 1985, crude stocks had been rebuilt to the same level as the year before.

CLOSING OIL INVENTORIES

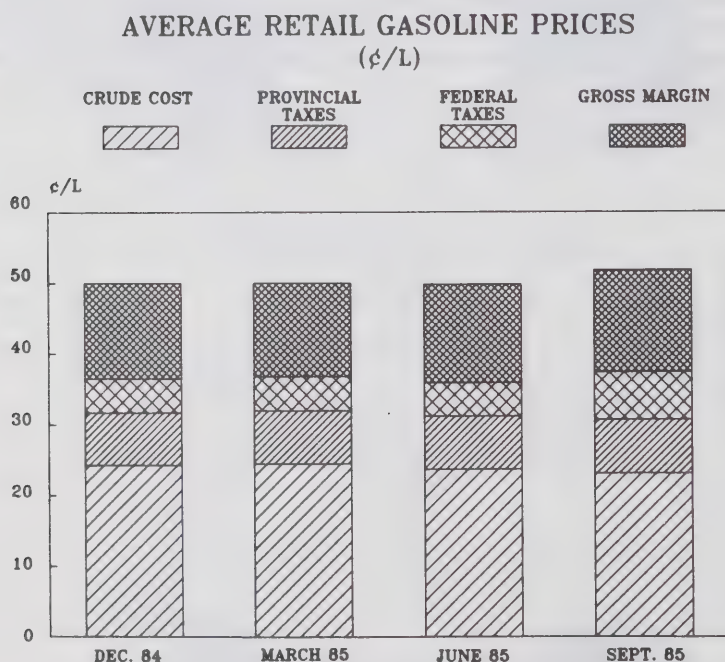


In the case of products, however, inventories were drawn down over the first half of 1985 and then rebuilt somewhat in the third quarter. Although the level was lower than in 1984, consistent with more efficient inventory management practices, the pattern was much the same as in 1984, that is, inventories were reduced in the first half of the year and rebuilt during the third quarter. The second quarter is usually favoured by refiners for refinery turnaround and maintenance, which explains the inventory draw.

PRICES

Retail prices did not vary significantly over the period under review, despite deregulation. Average retail gasoline prices in Canada* were 50¢/L in December 1984. They had fallen marginally by June 1985 to 49.8¢/L. By September they had risen to 51.8¢/L. (Examples of much wider price fluctuations over this period exist, but when they are averaged over the entire country for a month, their significance is greatly diminished.)

Crude cost, defined as the delivered cost of crude oil at the refinery, including all upstream taxes, royalties and charges, decreased by 1.2¢/L over the period to 23.1¢/L, or by almost 5 per cent. Crude costs fell by about 0.7¢/L with the removal of the Canadian Ownership Special Charge in June. Thereafter, crude costs continued to drift downward as world oil prices declined during the summer.



* Appendix 1 provides additional detail on average retail prices by city.

Provincial taxes* increased only marginally, by 0.2¢/L, over the review period, while federal downstream taxes rose by almost 2¢/L. All of the federal increase occurred in September, when the federal excise tax on gasoline was raised.

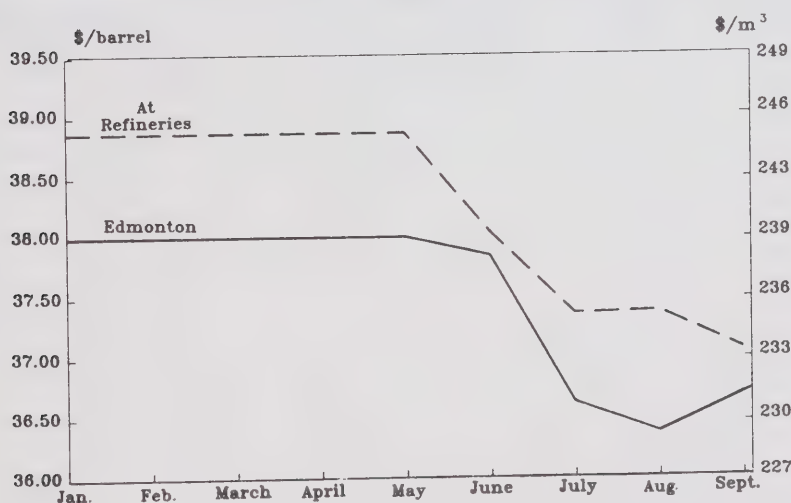
Gross margins, the amount available to cover all the costs of refining, marketing, and distribution, as well as profits, fell initially during the regulated period, then rose somewhat. The net increase over the period was 0.9¢/L, or almost 7 per cent.

In summary, a 3¢/L increase in federal and provincial taxes, as well as increases in company margins, were partly offset by a 1.2¢/L decrease in crude oil costs over the first three quarters of 1985.

Crude oil prices** have declined since deregulation. The Edmonton price initially fell only marginally in line with June posted prices but then dropped more sharply in July, reflecting declining international prices in the United States and an element of shut-in productive capacity. In September, the posted prices started to climb again.

The average cost of Canadian crude oil at refineries initially fell faster than posted prices, as regulated crude in the system continued to reach refineries but was now free of the Canadian Ownership Special Charge. In the months following, Canadian crude costs at refineries continued to decline in line with posted prices, but with a lag reflecting the shipment time in pipelines.

AVERAGE PRICES OF CANADIAN LIGHT CRUDE OIL
1985



* These figures represent weighted averages across all provinces and regions. See Appendix 2 for a breakdown.

** All of the crude oil prices have been adjusted to a common par crude specification for comparability (40° API and 0.5 per cent sulphur).

INVESTMENT

Preliminary 1985 investment figures* for the upstream petroleum industry** exceeded \$10 billion, an increase of 24 per cent over 1984. In addition, it is estimated there was \$600 million in downstream capital spending and \$750 million in pipeline spending** in 1985, for a total of \$11.6 billion. This was an increase of \$1.8 billion over the preceding year, or almost 18 per cent.

On a preliminary basis, capital expenditures in electricity and natural gas fell marginally so that petroleum represented 52.5 per cent of all energy*** capital expenditures in Canada in 1985 and 10.7 per cent of capital expenditures in the total economy.

* Source: Statistics Canada Cat. No. 61-206 (includes both capital expenditures and major repair expenditures).

** Includes expenditures related to natural gas.

*** Because of confidentiality, coal is excluded.

Appendix 1

AVERAGE RETAIL PRICES AND MARGINS, REGULAR LEADED GASOLINE

	Dec./84	Mar./85	June/85	Sept./85	Change Last 12 Months
	(Canadian cents per litre)				%
St. John's	56.9	58.3	58.0	59.8	9.7
Charlottetown	57.9	57.3	56.0	57.9	4.5
Halifax	55.1	56.3	56.0	57.7	10.7
Saint John	52.9	55.3	49.2	55.9	20.2
Montreal	58.1	59.2	56.1	57.7	5.7
Ottawa	49.4	50.4	50.0	51.1	15.9
Toronto	48.1	49.0	46.1	48.9	7.0
Winnipeg	43.7	47.3	51.4	52.9	23.0
Regina	44.4	45.7	45.2	43.6	4.3
Calgary	42.1	42.2	44.4	45.9	11.4
Vancouver	52.7	47.3	53.6	55.6	11.2
Canada average	50.0	50.0	49.8	51.8	9.1
Less - Fed. taxes	4.8	4.8	4.7	6.7	52.3
- Prov. taxes	7.4	7.5	7.5	7.6	5.6
- Crude costs	24.3	24.5	23.7	23.1	0.9
Wholesale-retail margin	13.5	13.2	13.9	14.4	10.8
12-month moving average	13.3	13.3	13.5	13.6	5.7

Appendix 2

CONSUMPTION TAXES ON PETROLEUM PRODUCTS,
NOVEMBER 1, 1985

	Ad Valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(per cent)		(cents per litre)			
<u>Federal Taxes</u>						
Sales(a)			3.26	3.57	3.67	2.97
Excise			3.5	3.5	3.5	2.0
<u>Provincial Taxes</u>						
Newfoundland	22	26	11.1	11.1	11.1	13.2
Prince Edward Island	20	23	10.1	10.1	10.1	11.4
Nova Scotia	20	21	9.7	9.7	9.7	9.6
New Brunswick	20	23	9.7	10.1	10.2	10.2
Quebec	30(b)	30	12.90	13.35	13.80	11.25
Ontario	20	27	8.0	8.4	8.6	9.3
Manitoba	-	-	8.9	8.0	8.0	9.2
Saskatchewan	-	-	-	-	-	-
Alberta	-	-	-	-	-	-
British Columbia	20(c)	20(c)	8.23	8.23	8.23	8.67
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	15	(d)	6.5	6.5	6.5	5.5

(a) Based on a specific amount per litre. (b) Reduced by one third within 5 km of the provincial border. (c) Additional transit tax of 0.95¢/L in Vancouver. (d) 85% of gasoline tax.

Glossary of Terms

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In-situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oils with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.
Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Glossary of Terms
(continued)

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.



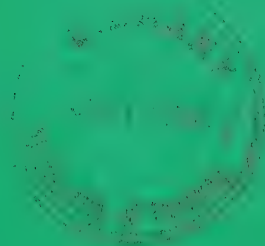
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The Canadian Oil Market

June 1986



Canada

THE CANADIAN OIL MARKET

JUNE 1986

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THE CANADIAN OIL MARKET

INTRODUCTION

This issue of *The Canadian Oil Market* is the third in a series that reports quarterly on developments in Canadian oil supply and demand. This issue covers the fourth quarter of 1985.

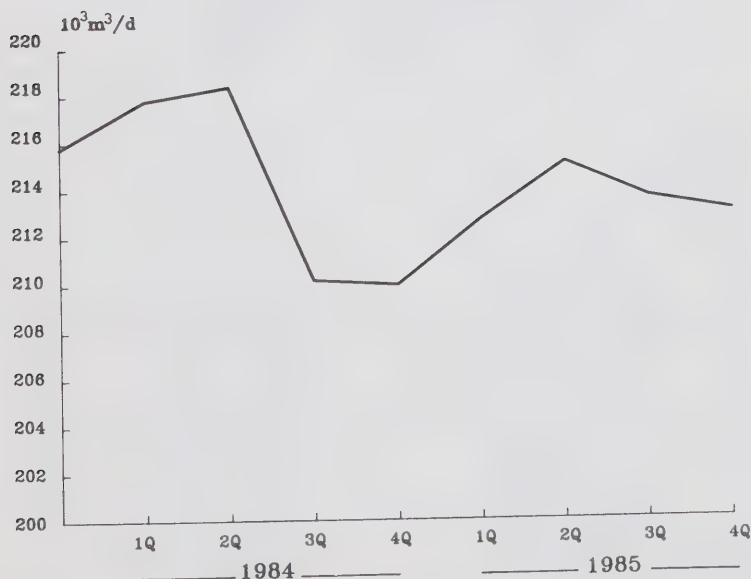
In future issues, we will attempt to improve the timeliness of the reports and incorporate comments received on content, methodology and style of earlier issues. The reports are not fixed in form or content but rather are expected to describe developments and explain some of the issues that arise over the period under review.

CANADIAN DEMAND

Oil demand in the fourth quarter rose marginally (1.6 per cent) from the year prior to $223 \text{ } 10^3 \text{ m}^3/\text{d}$, to yield an annual average of $214 \text{ } 10^3 \text{ m}^3/\text{d}$, the same level as 1984. On a seasonally adjusted basis, the minor decline recorded in the third quarter represented a small deviation from the slow but steady rate of growth since the historical low point in the fourth quarter of 1984.

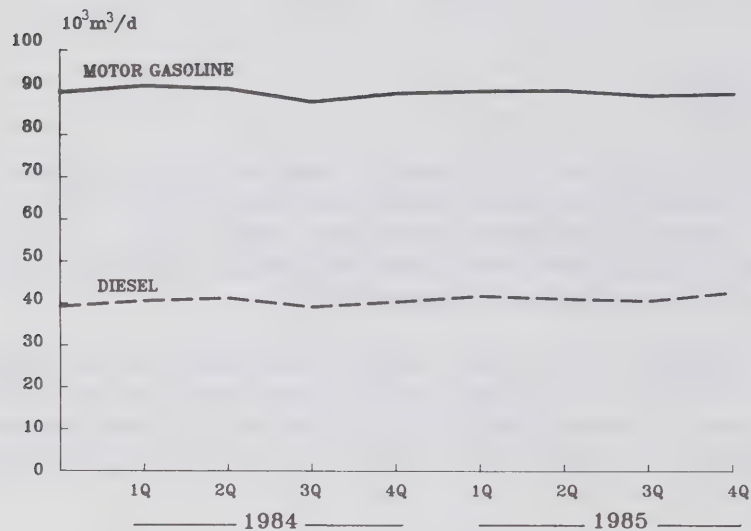
On a regional basis, only British Columbia had a decline in demand (-2.8 per cent) in the fourth quarter, and Quebec consumption remained flat on a year-over-year basis. Consumption in the Prairie and Atlantic regions both rose by 2 per cent and Ontario's increased by almost 4 per cent in the fourth quarter.

TOTAL OIL PRODUCT CONSUMPTION
(SEASONALLY ADJUSTED)

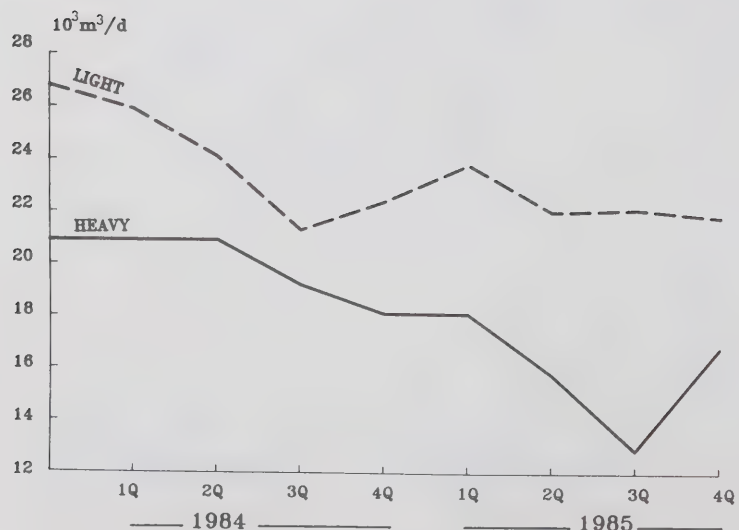


For the year as a whole, the Atlantic region and British Columbia exhibited no change from 1984. Although consumption in Ontario and the Prairies rose by 2.1 per cent and 3.5 per cent, respectively, in Quebec it continued to decline, down by almost 6 per cent over the year. The more rapid rate of decline in Quebec continues a pattern that has been evident for several years. The share of oil in the province's total energy consumption has been dropping faster than the national average, reflecting expansion of both natural gas and electricity as alternative energy sources.

TRANSPORTATION FUEL CONSUMPTION (SEASONALLY ADJUSTED)



FUEL OIL CONSUMPTION (SEASONALLY ADJUSTED)



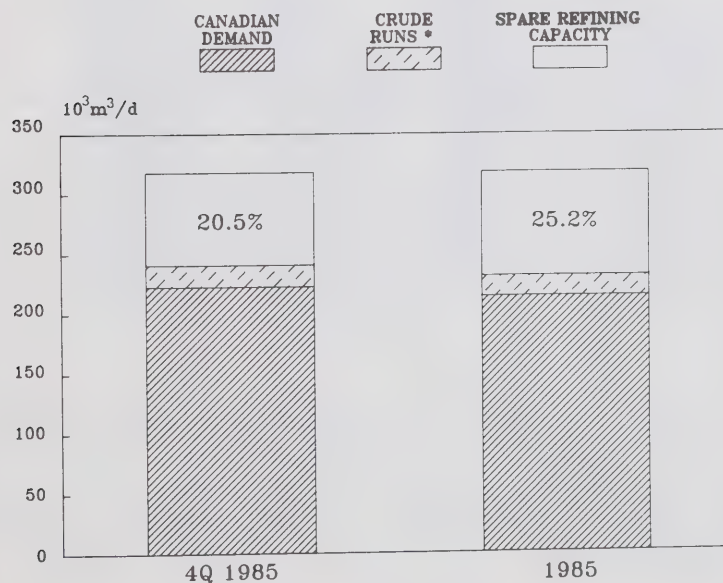
On an individual product basis, the demand for motor gasoline reflected total product consumption, that is, no change year-over-year in either the quarter or the total for the year. Demand for diesel remained strong in the fourth quarter, up almost 6 per cent from a year earlier, to yield a growth rate of almost 3 per cent for the year. Demand for turbo fuels for air transport was also up for the year. Given that the growth rate for the economy as a whole has been estimated at almost 5 per cent for 1985, one might have expected a higher growth rate for transportation fuels. The relative strength in diesel fuel sales appears to reflect higher levels of industrial activity but gasoline consumption continues to reflect the improvement in total fleet fuel consumption as older models are replaced by more efficient new automobiles.

On a seasonally adjusted basis, the consumption of heavy fuel oil rebounded sharply, reflecting lower prices in world markets following the end of the British coal miners' strike. Light fuel oil consumption remained relatively stable, even though average temperatures in Canada east of the Prairies, where most of the home heating oil is consumed, were about 10 per cent colder than during the fourth quarter of 1984. Continuing trends to alternative fuels, more energy-efficient furnaces, and improved insulation levels have all contributed to this lack of movement.

REFINERY UTILIZATION

Over the course of the fourth quarter Canadian refinery utilization exceeded 75 per cent of capacity at $241 \times 10^3 \text{ m}^3/\text{d}$, and exceeded domestic demand by $18 \times 10^3 \text{ m}^3/\text{d}$. The excess refined product must be exported or accumulated in inventory. In fact, Canada was a net product exporter over the quarter of almost $13 \times 10^3 \text{ m}^3/\text{d}$, while product inventories accumulated over the quarter at a rate of almost $5 \times 10^3 \text{ m}^3/\text{d}$.

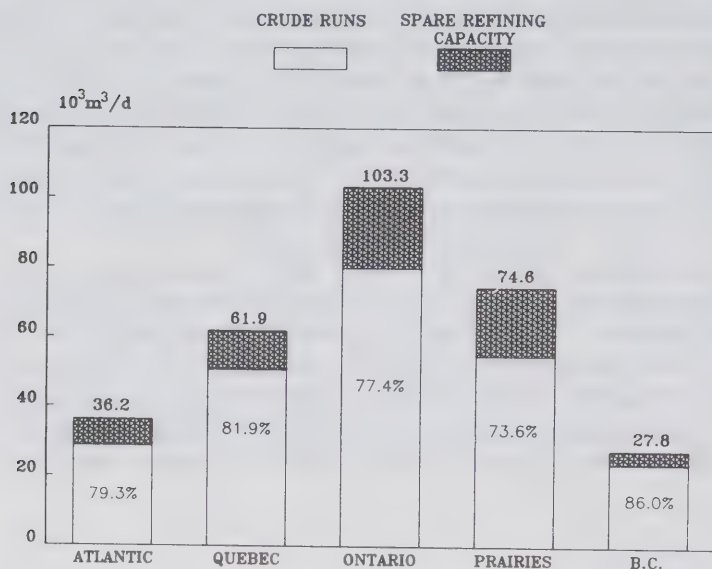
REFINERY UTILIZATION



* Includes LPG

REGIONAL REFINERY UTILIZATION

4Q 1985



Over the year, refinery capacity utilization approached 75 per cent; crude runs to the distilleries were $231 \times 10^3 \text{ m}^3/\text{d}$. About 92 per cent of the crude run was for domestic consumption ($214 \times 10^3 \text{ m}^3/\text{d}$) and the remainder was for export or inventory accumulation.

On a regional basis, refinery utilization ranged from a high of 86 per cent in British Columbia to 74 per cent in the Prairies. Of particular interest was the sharp increase in refinery utilization in the Atlantic region, up to 79 per cent from a 59 per cent average over the first three quarters of 1985. This improved performance mostly reflects the refining of crude oil for the export market.

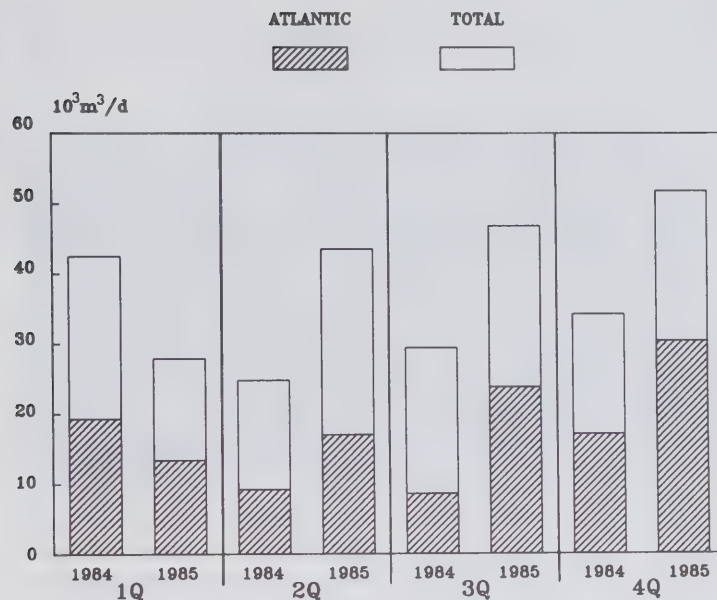
CRUDE OIL REQUIREMENTS

Total crude oil received at Canadian refineries during the fourth quarter of 1985 rose by 3.4 per cent over the same period a year earlier, to $230.2 \times 10^3 \text{ m}^3/\text{d}$.

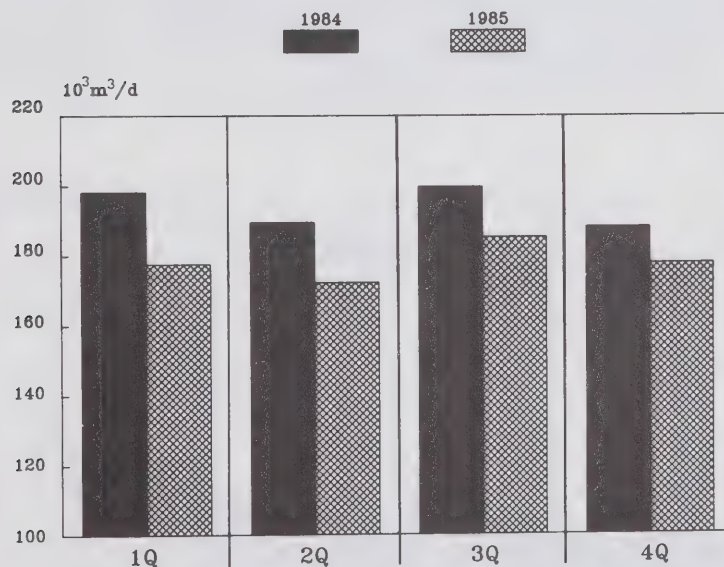
The pattern experienced during the previous two quarters, when deregulation began, persisted: Canadian crude, which had been used in eastern Canada the previous year, was displaced by foreign crude. Canadian crude received at refineries dropped by 5.5 per cent from the previous year to $178 \times 10^3 \text{ m}^3/\text{d}$, roughly equal to the annual average. It is interesting that heavy crude oil deliveries increased, compared with a year earlier (up $3 \times 10^3 \text{ m}^3/\text{d}$), particularly in Montreal.

Imported crude oil receipts rose 52 per cent during the fourth quarter to $52 \times 10^3 \text{ m}^3/\text{d}$, yielding an annual average of $47 \times 10^3 \text{ m}^3/\text{d}$. As a result, imported crude represented almost 23 per cent of total crude oil received during the quarter, pushing the annual share of imports to 19 per cent. Refined product imports, however, dropped almost 40 per cent to $10 \times 10^3 \text{ m}^3/\text{d}$, reflecting the high spot prices paid offshore during the fourth quarter.

CRUDE OIL IMPORTS



CANADIAN CRUDE OIL RECEIPTS



Similarly, product exports rose sharply (74 per cent) during the quarter to $23 \times 10^3 \text{m}^3/\text{d}$ because of the opportunities created by the higher prices in foreign markets and the need to dispose of product imbalances. For the year as a whole, Canada remained a net refined product exporter in the amount of $11 \times 10^3 \text{m}^3/\text{d}$, up from $6 \times 10^3 \text{m}^3/\text{d}$ in 1984. In the face of continuing declines in oil consumption in Canada, such trade permits improved utilization of the remaining refining capacity and an opportunity to trade surplus products for overall efficiencies in the market.

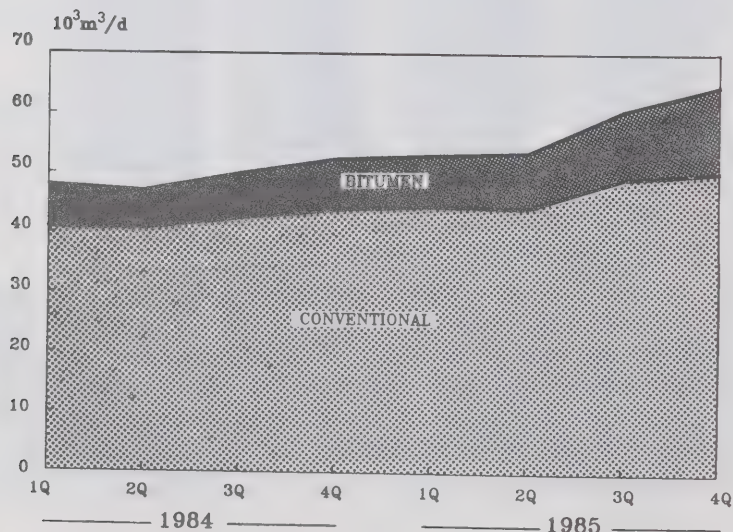
PRODUCIBILITY

Although in the fourth quarter total capacity to produce crude oil and equivalent (producibility) rose by more than 7 per cent, to almost $270 \times 10^3 \text{m}^3/\text{d}$, from the fourth quarter of 1984, heavy crude accounted for about three quarters of the gain. On a year-over-year basis heavy crude producibility rose almost 18 per cent to $58 \times 10^3 \text{m}^3/\text{d}$, mostly because of the start-up and expansion of several bitumen and conventional heavy crude recovery projects. Many of the projects, which use in situ oil recovery techniques, are located near the Saskatchewan-Alberta border in the Cold Lake and Lloydminster areas. Accelerated expansion of Esso Resources Canada Limited's Cold Lake project contributed significantly to the increase in heavy crude producibility during the second half of 1985.

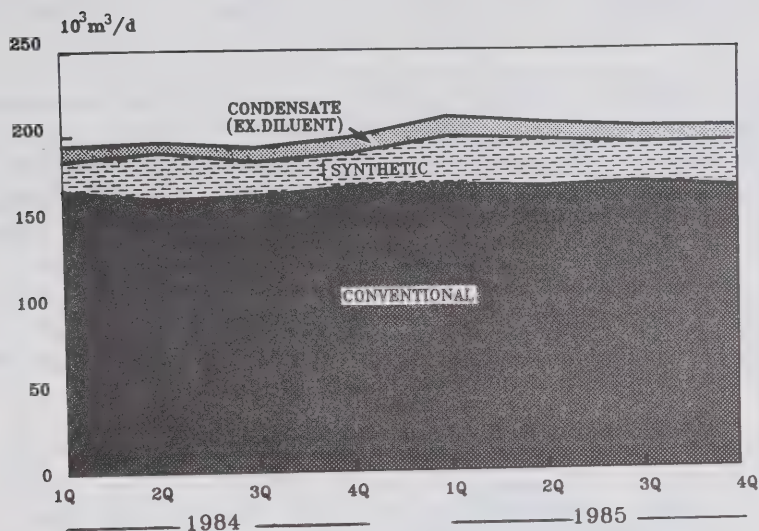
In contrast to growth in heavy crude producibility, for the first time in several years conventional light oil producibility fell, by more than 1 per cent, to $167 \times 10^3 \text{m}^3/\text{d}$ in the fourth quarter of 1985 from the fourth quarter of 1984. For the entire year, however, conventional light producibility grew marginally, by 2 per cent, or $3 \times 10^3 \text{m}^3/\text{d}$. Since early 1985 producibility in Alberta, where more than 85 per cent of Canadian light crude oil production originates, has been falling as the natural decline of the reservoirs and the lack of significant new discoveries have caused producibility to decline. Declining producibility in Alberta has been offset by increased production from other regions, including, as mentioned in the February 1986 report, the Northwest Territories. However, production from these areas leveled off in the second half of 1985, leading to the decline in the fourth quarter.

Throughout the fourth quarter, and for the entire year, both synthetic oil plants operated without major problems. Production rose by over $5 \times 10^3 \text{m}^3/\text{d}$ to $27 \times 10^3 \text{m}^3/\text{d}$ during the period, yielding an annual average of $26 \times 10^3 \text{m}^3/\text{d}$ for 1985. During most of 1985 the plants ran at more than 95 per cent of estimated sustainable capacities (which accounts for maintenance time).

HEAVY CRUDE PRODUCIBILITY (INCLUDING DILUENT)



LIGHT CRUDE OIL PRODUCIBILITY



The availability of condensate continued to rise through the fourth quarter, and for the year was up about 9 per cent, to almost $17 \times 10^3 \text{m}^3/\text{d}$. As indicated in the previous report, this increase was due to higher natural gas production. Thus, total producibility in the fourth quarter was up almost $17 \times 10^3 \text{m}^3/\text{d}$ (6.1 per cent) despite a drop in conventional light crude oil producibility. For the longer term, this phenomenon raises a dilemma for Canadian oil supply requirements: the producibility of light crude oil and equivalent may have peaked while heavy crude oil producibility continues to rise. Canadian refineries, however, are equipped to refine only limited amounts of heavy crude oil.

PRODUCTION AND SHUT-IN

Total production in the fourth quarter was up by almost $11 \times 10^3 \text{m}^3/\text{d}$ (4.3 per cent) from the same period a year earlier. This performance brought the annual level of output to $249 \times 10^3 \text{m}^3/\text{d}$, up from $242 \times 10^3 \text{m}^3/\text{d}$ in 1984. The bulk of the increase was attributed to heavy crude oil, up 24 per cent from the previous year, whereas light crude oil production fell by $5 \times 10^3 \text{m}^3/\text{d}$. In both cases, production could have been somewhat higher except for some pipeline capacity problems experienced in December. Although the capacity of the Interprovincial Pipe Line system had been expanded by almost $12 \times 10^3 \text{m}^3/\text{d}$ at the beginning of the fourth quarter, this additional space was fully utilized by December. Nevertheless, spare pipeline space remained available throughout the quarter on the Trans Mountain pipeline system, which runs from Edmonton to Vancouver and Washington state.

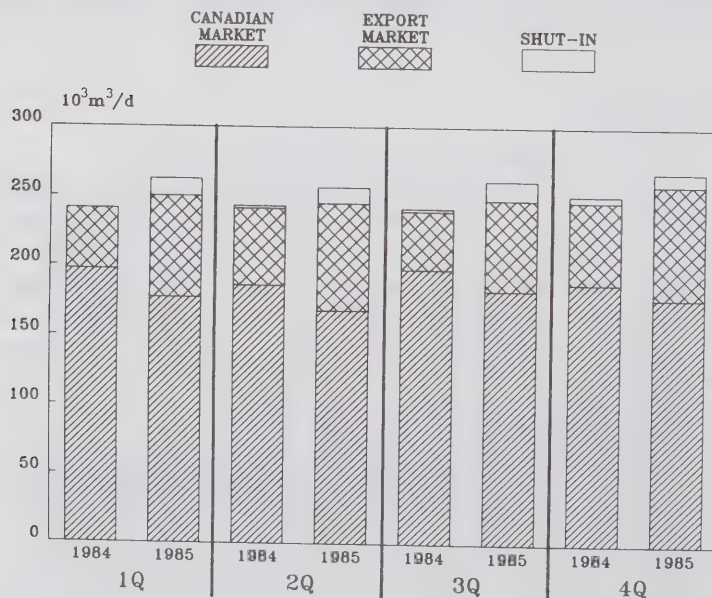
Shut-in averaged more than $7 \times 10^3 \text{m}^3/\text{d}$ in the fourth quarter, of which less than $1 \times 10^3 \text{m}^3/\text{d}$ was heavy crude oil. Because of the expense and difficulty associated with shut-in heavy crude oil production capacity, the industry had agreed that heavy crude should have a priority on available pipeline space. As capacity limits are pushed more frequently, some companies have questioned this practice. In the fall of 1985, the National Energy Board held hearings into the apportionment of pipeline space on the IPL system. It was decided to prorate proportionally all

shippers' nominations back to available space, with a provision for designated shippers. In the latter cases, a shipper with a particular problem, such as no alternative means of crude oil delivery to the refinery, would have his requirements met without apportionment. The provision was invoked in December but it has not had to be used.

Another measure that was introduced during the fourth quarter was a supplementary sales system in Alberta, which is administered by the Energy Resources Conservation Board as part of its prorationing system. Should productive capacity for light crude oil exceed demand or transportation capability, the Alberta ERCB may establish production allowables to restrain output to identified demand around the end of the preceding month. The supplementary sales system permits potential buyers for the production that otherwise would be shut in to propose arrangements to bring that crude oil to market under certain conditions specified in public tenders. Although prices may be higher or lower than those generally received (postings), the system does permit incremental crude oil to flow to market.

During the fourth quarter of 1985, more than $6 \times 10^3 \text{m}^3/\text{d}$ of crude oil (about 2 per cent of productive capacity) moved as part of the supplementary sales. At the end of December, the system was extended on an interim basis while improvements and alternatives were being sought. As a result of the additional pipeline capacity and the supplementary sales system, the level of shut-in during the fourth quarter of 1985 ($7 \times 10^3 \text{m}^3/\text{d}$) was considerably improved over the first three quarters of the year ($13 \times 10^3 \text{m}^3/\text{d}$).

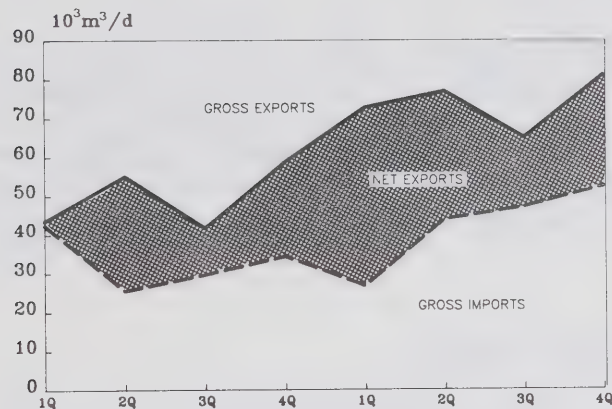
DISPOSITION OF TOTAL CRUDE OIL PRODUCIBILITY



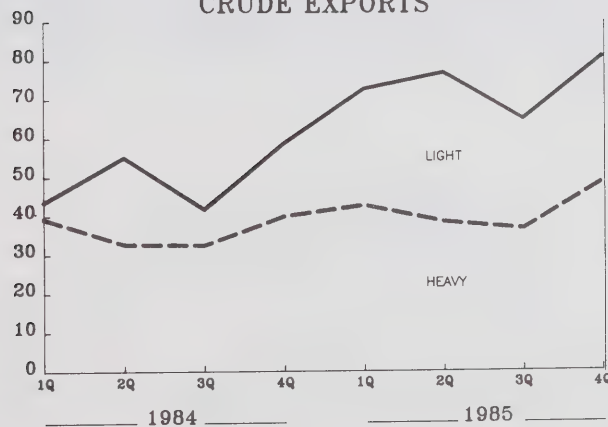
EXPORTS AND IMPORTS

The pattern of exports and imports since deregulation continued during the fourth quarter of 1985, when crude exports increased faster (17 per cent) than imports (11 per cent). During the fourth quarter, however, most of the increase in crude exports was in heavy crude oil, reflecting higher output from bitumen projects and the traditional seasonal reduction in domestic requirements for asphalt manufacture. As a result, the net crude oil export surplus in the fourth quarter rose to almost $29 \times 10^3 \text{ m}^3/\text{d}$, an increase of $4 \times 10^3 \text{ m}^3/\text{d}$ from the same period a year earlier. Gross exports represented 31 per cent of fourth quarter production (11 per cent on a net export basis).

CRUDE OIL EXPORTS/IMPORTS

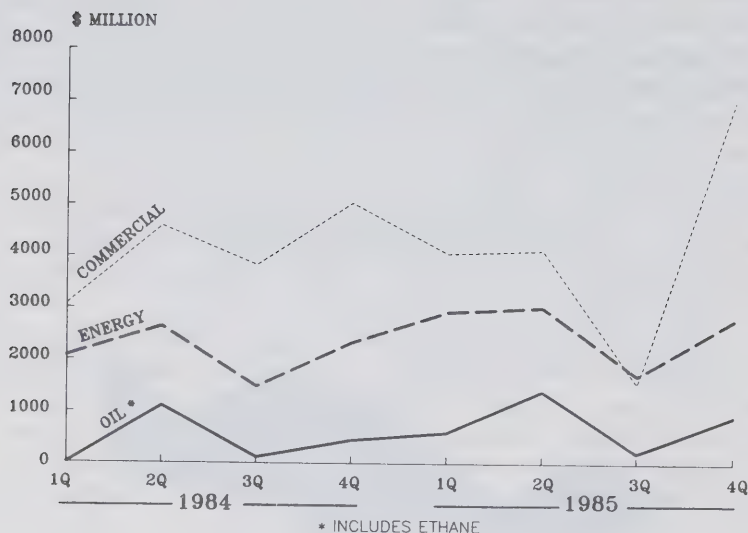


CRUDE EXPORTS



In monetary terms, the oil trade surplus (including refined products) rose to more than \$900 million in the fourth quarter, yielding an annual surplus of more than \$3 billion. Oil contributed roughly one third of the energy trade surplus of \$2.7 billion in the fourth quarter, and virtually all of the increase in the energy surplus over the quarter. Because of the sharp jump in the non-energy merchandise trade surplus in the fourth quarter, the oil share dropped to 13 per cent. For the year as a whole, oil contributed almost 22 per cent to the merchandise trade surplus.

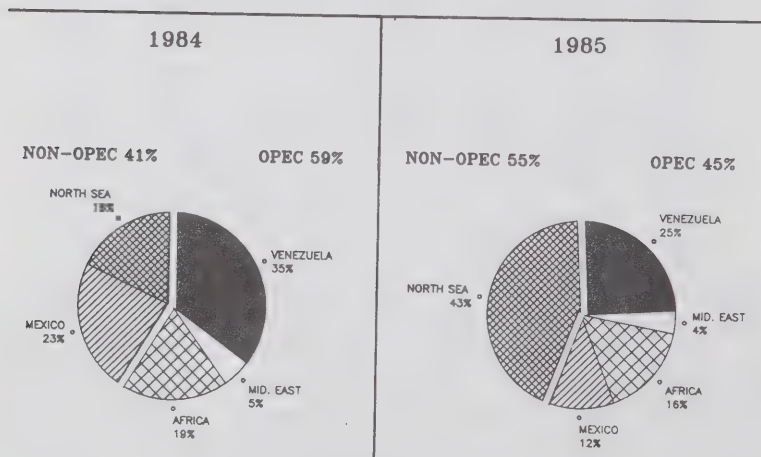
OIL AND ENERGY TRADE BALANCE (QUARTERLY)



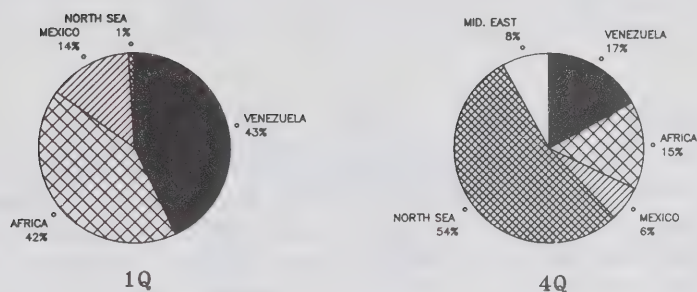
SOURCES OF CRUDE OIL IMPORTS

Imports of crude oil during the fourth quarter of 1985 rose sharply (53 per cent) to $52 \times 10^3 \text{ m}^3/\text{d}$ over the same period a year earlier. About three quarters of the increase took place in the Atlantic Provinces, reflecting both the termination of the Atlantic transfer program and volumes imported for processing and re-export.

IMPORT MARKET SHARES



IMPORT MARKET SHARES 1985

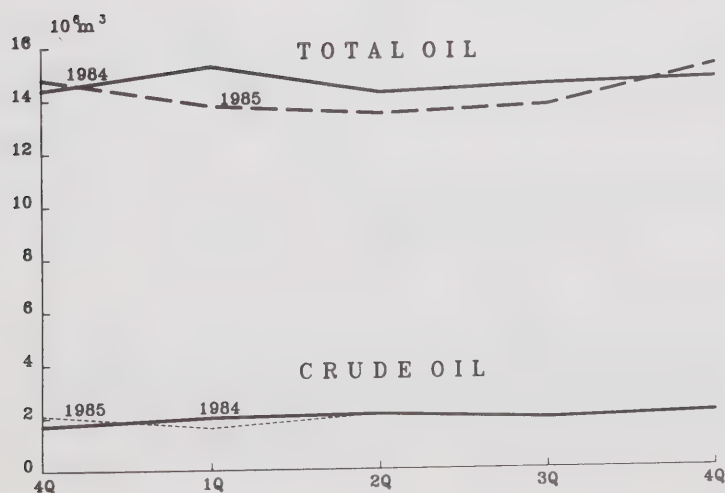


Crude oil imports for the year averaged $43 \cdot 10^3 \text{ m}^3/\text{d}$, a 10 per cent increase over 1984. Imports from OPEC countries remained level at $19 \cdot 10^3 \text{ m}^3/\text{d}$. With all of the increase coming from non-OPEC countries, the share from OPEC dropped to 45 per cent in 1985, down from almost 60 per cent in 1984. Sourcing shifted dramatically in 1985. The share coming from the North Sea area exploded from virtually nothing in the first quarter to more than half in the fourth quarter, at the expense of all other sources.

INVENTORIES

Over the fourth quarter, crude oil inventories at refineries rose marginally to end the year at the same level as in 1984. Product inventories, however, fell by 5 per cent over the quarter ($6 \cdot 10^3 \text{ m}^3/\text{d}$) to end the year at $11 \cdot 10^6 \text{ m}^3$.

CLOSING OIL INVENTORIES



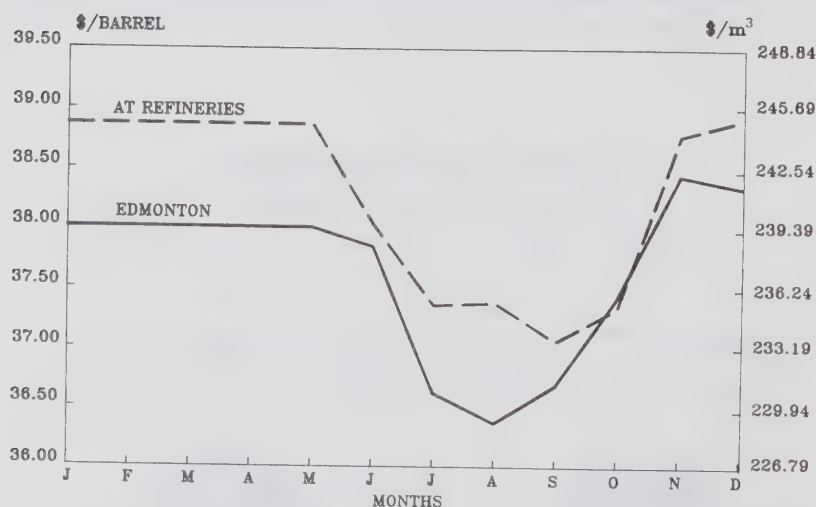
This was a drop of 16 per cent over the year, or the equivalent of 10 days of consumption in 1985. This drawdown was because lower prices were anticipated and because rationalization of operational inventories continued in the face of lower consumption and higher costs. Further rationalization might be expected over the first quarter of 1986 following the closure of the Gulf Canada Limited refinery in Montreal at the end of 1985.

PRICES

Over the fourth quarter of 1985, average retail gasoline prices in Canada rose about 1¢/L, although the increases varied from zero to almost 4¢/L across the nation (see appendix). Federal and provincial taxes* remained virtually unchanged over this period, and crude costs rose by over 1¢/L. The latter increase was partly offset by a marginal reduction of 0.3¢/L in wholesale-retail margins.

Crude oil prices** also rose throughout the quarter, both in the field (reflecting higher posted prices offered by purchasers) and at the refinery gate. Because of the length of time it typically takes crude oil to reach refineries, the Edmonton price slightly surpassed the refinery gate price in October. In December, by contrast, while the upstream prices were starting to decline marginally, the refinery gate price was still rising. This type of discrepancy is not unusual and is relevant in explaining variances in price movements at the wellhead vs. the retail level.

AVERAGE PRICES OF CANADIAN LIGHT CRUDE OIL



* These figures represent weighted averages across all provinces and regions. See Appendix 2 of the February 1986 report for a detailed breakdown.

** All of the crude oil prices have been adjusted to a common par crude specification for comparability (40° API and 0.5 per cent sulphur).

Appendix

AVERAGE RETAIL PRICES AND MARGINS, REGULAR LEADED GASOLINE, 1985

	March	June	September	December	Change, Last 12 Months
	(Canadian cents per litre)				(%)
St. John's	58.3	58.0	59.8	61.8	8.6
Charlottetown	57.3	56.0	57.9	58.5	1.0
Halifax	56.3	56.0	57.7	58.1	5.4
Saint John	55.3	49.2	55.9	59.8	13.0
Montreal	59.2	56.1	57.7	58.2	0.2
Ottawa	50.4	50.0	51.1	52.2	5.7
Toronto	49.0	46.1	48.9	50.7	5.4
Winnipeg	47.3	51.4	52.9	54.2	24.0
Regina	45.7	45.2	43.6	44.3	-0.2
Calgary	42.2	44.4	45.9	46.6	10.7
Vancouver	47.3	53.6	55.6	55.5	5.3
Canada average	50.0	49.8	51.8	52.7	5.4
Less - Fed. taxes	4.8	4.7	6.7	6.8	41.7
- Prov. taxes	7.5	7.5	7.6	7.6	2.7
- Crude costs	24.5	23.7	23.1	24.2	-0.4
Wholesale-retail margin	13.2	13.9	14.4	14.1	4.4
12-month moving average	13.3	13.5	13.6	13.9	4.3

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oils with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.
Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Glossary (continued)

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

QUESTIONNAIRE

We hope you found this third edition of *The Canadian Oil Market* timely and useful.

We wish to thank the many readers who have previously given us their comments and support. To keep improving this publication, the Department of Energy, Mines and Resources would like to have your thoughts on the current edition of *The Canadian Oil Market*. Please complete this questionnaire and mail it in the enclosed postpaid envelope.

Even if you responded to our invitation for comments in the first issue, we would like to hear from you again. Your thoughts and opinions are appreciated.

- | | YES | NO |
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Vol. II, No. 1 First Quarter 1986

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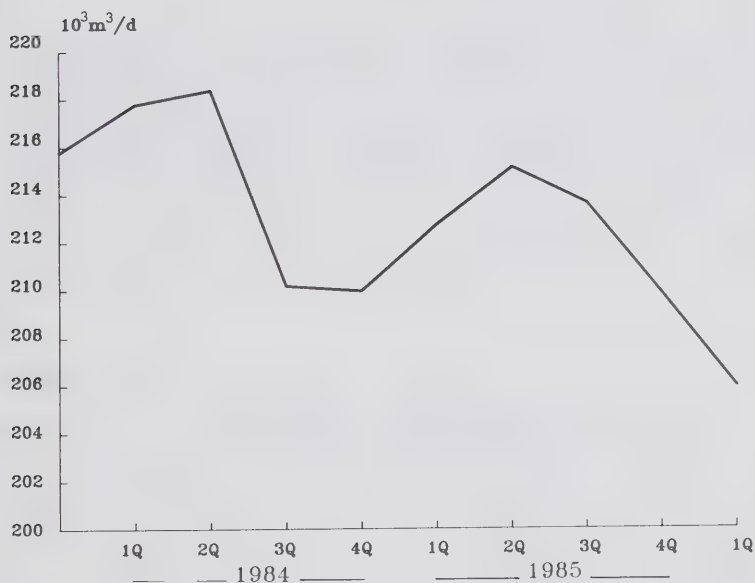
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THE CANADIAN OIL MARKET

DOMESTIC DEMAND

Total oil product consumption during the first quarter of 1986 fell by almost 2 per cent from the 1985 average on a seasonally adjusted basis. This continues the rather modest declines of the past two years. Since prices for crude oil and refined oil products were falling through most of the quarter, final consumers may have been holding back on restocking at the end of March, in anticipation of lower prices in the second quarter. The first-quarter drop in sales, on a seasonally adjusted basis, was also the third consecutive quarter-over-quarter drop in total sales, which may also be related to a slowing down in the rate of growth of the economy, about 0.6 per cent during the quarter.

TOTAL OIL PRODUCT CONSUMPTION
(SEASONALLY ADJUSTED)

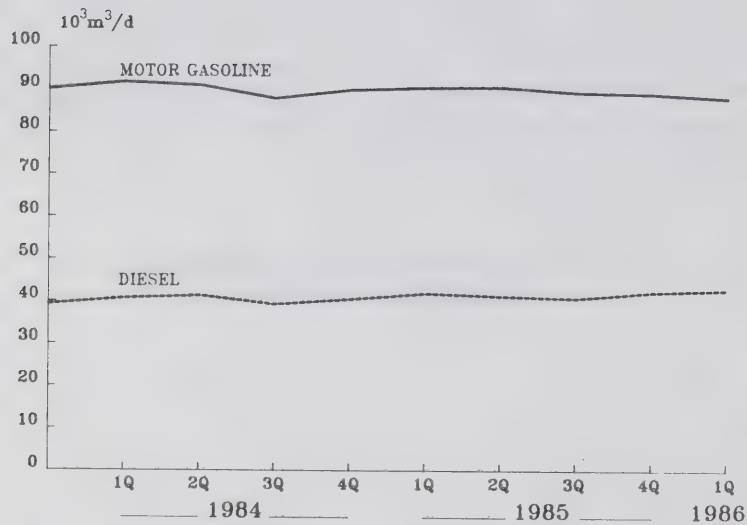


Among the major refined oil products, only diesel fuel oil showed any growth (up roughly 1 per cent) from either the previous quarter or the average for the previous years. Motor gasoline, in contrast, dropped by more than 1 per cent in the first quarter, following upon marginal declines in the previous two years. In the case of diesel fuel oil sales, the rate of increase represents a slight deceleration in the rate of growth portrayed over the past two years, similar to the rate of growth of the economy.

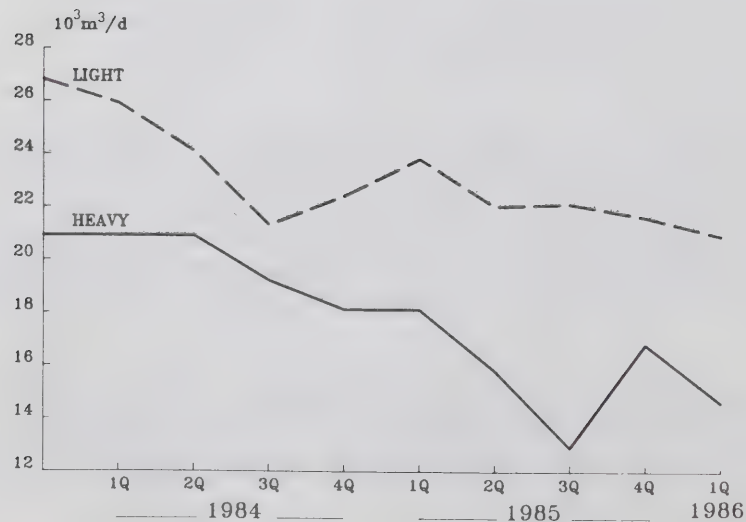
Both light and heavy fuel oil sales (seasonally adjusted) in the first quarter were down sharply (3 per cent and 13 per cent, respectively) from the previous year. The rate of decline may have been somewhat exaggerated by delayed stocking (or

drawdown in inventories) to take advantage of expected future price declines, particularly among industrial consumers. Temperatures that were on average about 3 per cent warmer than in the same period a year earlier may also have dampened fuel oil sales.

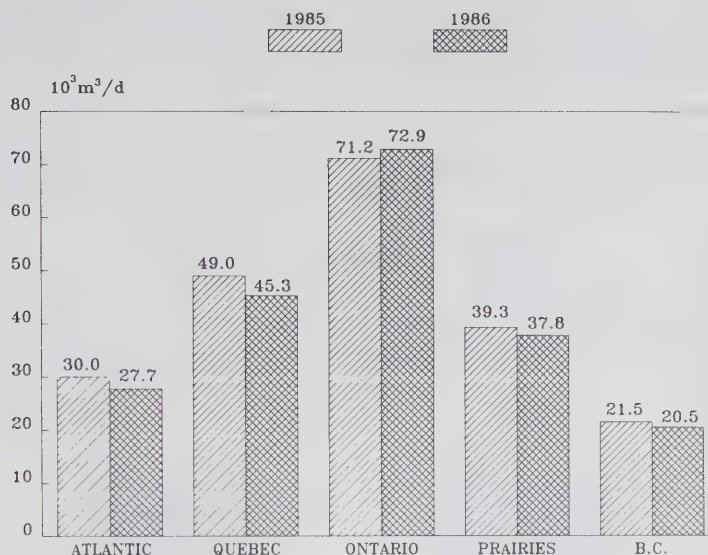
TRANSPORTATION FUEL CONSUMPTION (SEASONALLY ADJUSTED)



FUEL OIL CONSUMPTION (SEASONALLY ADJUSTED)



REGIONAL OIL DEMAND (FIRST QUARTER)



On a regional basis, only Ontario displayed any growth over the quarter on a year-over-year basis, sales rising more than 2 per cent, to $72.9 \times 10^3 \text{ m}^3/\text{d}$. In Ontario all refined oil product demand rose from the previous year with the exception of heavy fuel oil, of which the rate of decline was somewhat attenuated, however, compared with the past few years. Demand in all other regions fell, ranging from -7.7 per cent in the Atlantic region to -4.7 per cent in British Columbia. The variance in the regional rates of change in consumption is consistent with the corresponding rates of growth in the regional economies.

REFINERY UTILIZATION

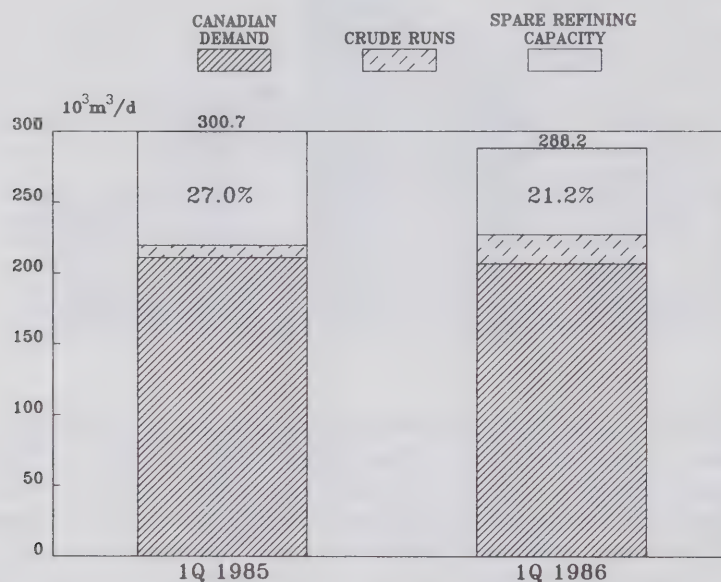
Despite the continued decline in petroleum consumption in Canada, total refinery capacity utilization increased during the first quarter of 1986.* Spare capacity diminished from 27 per cent in the first quarter of 1985 to 21 per cent in the same period of 1986. This change reflects both higher levels of crude oil run to stills, and the reduction in refining capacity of $12.5 \times 10^3 \text{ m}^3/\text{d}$ that resulted from the closure of the Gulf Montreal refinery at the end of 1985. If the Gulf refinery had been closed in the first quarter of 1985, spare capacity would have been reduced to 24 per cent, a reduction of 3 per cent. The crude runs in 1986 were up 3.4 per cent (about $7 \times 10^3 \text{ m}^3/\text{d}$) to $227.1 \times 10^3 \text{ m}^3/\text{d}$.

In Quebec, capacity utilization approached 90 per cent, an increase of 16 per cent from the same period of 1985. (Without the Gulf refinery closure and assuming the same level of crude runs, Quebec refinery capacity utilization would have fallen by 2 per cent.)

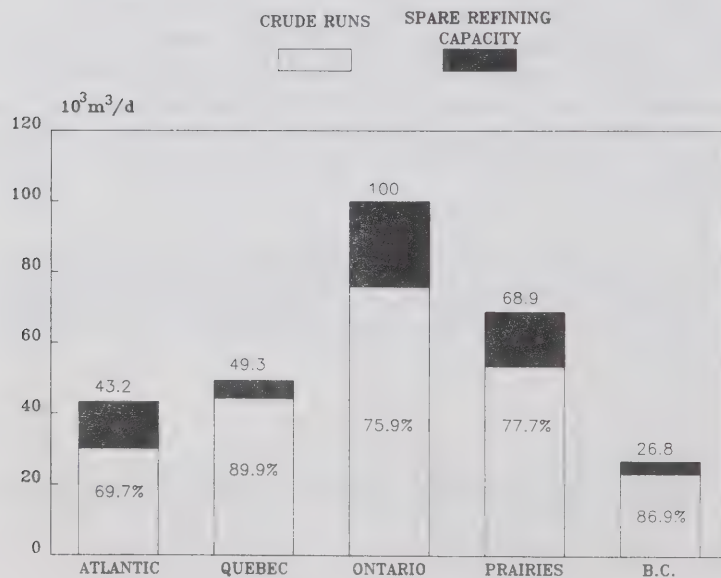
* Refinery capacity definitions have been modified slightly from previous reports.

The Atlantic region, which had the lowest rate of capacity utilization at almost 70 per cent, also demonstrated the greatest change, up almost 20 per cent over the previous year and reflecting much higher levels of crude oil throughput (up $8.2 \times 10^3 \text{ m}^3/\text{d}$). Utilization in the other regions did not change significantly compared with 1985, although Ontario and British Columbia were down marginally and the Prairies improved somewhat (see Appendices 3 and 4).

REFINERY UTILIZATION



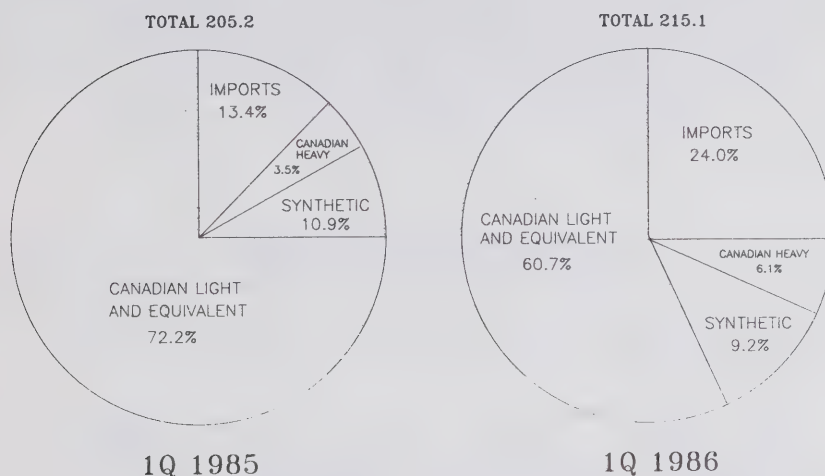
REGIONAL REFINERY UTILIZATION 1Q 1986



CRUDE OIL REQUIREMENTS

Despite the decline in end-use consumption over the first quarter of 1986, crude oil runs increased by more than 3 per cent. Refined oil product inventories rose by $10.4 \times 10^3 \text{m}^3/\text{d}$, or the equivalent of 5 per cent of consumption, accounting for the rise in crude oil runs. Net refined oil product exports, which dropped sharply to $3 \times 10^3 \text{m}^3/\text{d}$ during the first quarter from $11 \times 10^3 \text{m}^3/\text{d}$ a year earlier, partly offset the inventory-driven increase in crude runs. Product imports rose while product exports fell, partly reflecting generally lower prices in the United States over the first quarter.

CRUDE OIL RECEIVED AT CANADIAN REFINERIES ($10^3 \text{m}^3/\text{d}$)



Crude oil receipts at Canadian refineries during the first quarter increased almost 5 per cent, to $215 \times 10^3 \text{m}^3/\text{d}$. The share of imported crude oil was 24 per cent, almost double that of the same period a year earlier, reflecting the absence of the Atlantic transfer subsidy since deregulation. That program assisted the movement of Canadian crude oil to refineries east of Montreal. The share of imported crude oil used by Quebec refineries also rose compared with a year ago, partly because of the Gulf Montreal refinery closure. Because of the shorter delivery times to Montreal for some spot imported crude oil compared with Canadian crude oil, there was also some displacement to take advantage of prices.

The share of Canadian heavy crude oil also almost doubled to 6 per cent but the volumes remained rather low ($13 \times 10^3 \text{m}^3/\text{d}$), reflecting the Canadian refining industry's relatively low capacity for processing heavy crude oil.

Receipts of Canadian light crude oil and equivalent (including synthetic) dropped to 70 per cent of the total during the first quarter, down from 83 per cent in the same period in 1985. This shift was expected as both imports and Canadian heavy crude oil were at a disadvantage to Canadian light crude oil during the regulated pricing regime.

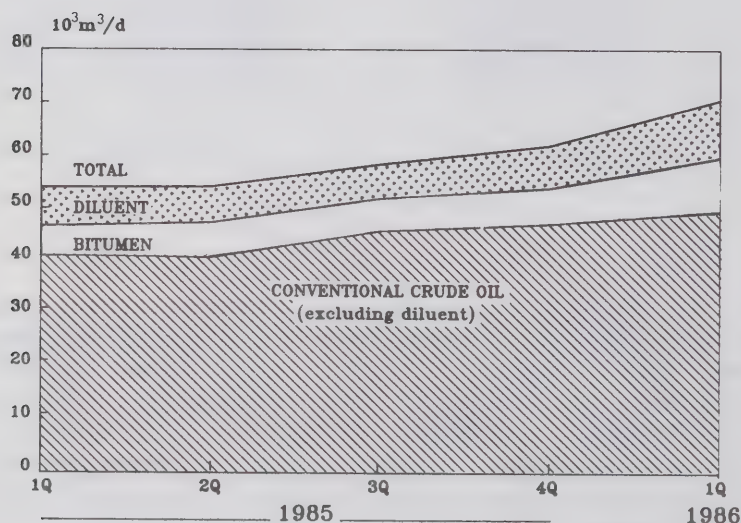
PRODUCIBILITY

As a result of a continued increase in heavy crude producibility in the Cold Lake and Lloydminster areas, total productive capacity of crude oil and equivalent rose about $4 \times 10^3 \text{m}^3/\text{d}$ over the first quarter of 1985, to $265 \times 10^3 \text{m}^3/\text{d}$ in the first quarter of 1986, despite a drop of more than $13 \times 10^3 \text{m}^3/\text{d}$ in light crude oil and equivalent producibility.

Even though crude oil prices began to fall sharply in January, and continued to drop through the first quarter, there was little or no impact on first-quarter producibility. (Of course, lower prices will have more impact on both short-term and longer term producibility forecasts, the longer they remain at such levels.)

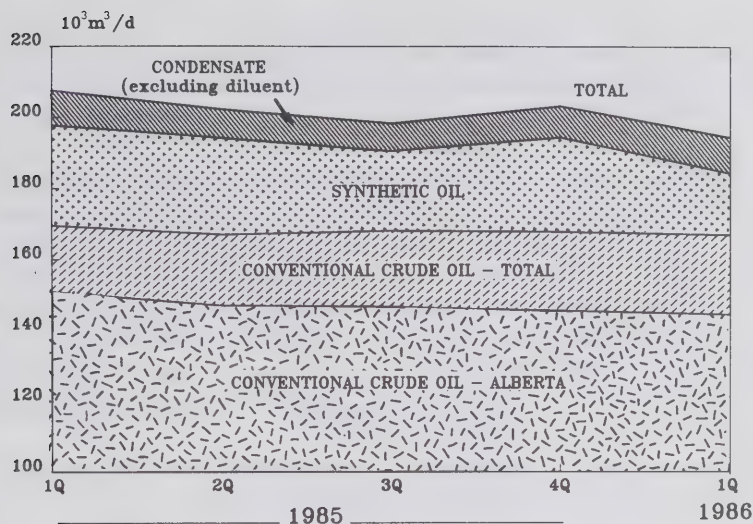
On a year-over-year basis heavy crude producibility increased by more than $16 \times 10^3 \text{m}^3/\text{d}$, to $70 \times 10^3 \text{m}^3/\text{d}$, including an increase of $4 \times 10^3 \text{m}^3/\text{d}$ in diluent requirements. Producibility also was up considerably ($9 \times 10^3 \text{m}^3/\text{d}$) from the fourth quarter of 1985. Incremental expansion of Cold Lake bitumen production contributed significantly to the increase in producibility, as it did through much of the second half of 1985.

HEAVY CRUDE PRODUCIBILITY



With respect to conventional light oil producibility, Alberta's capacity continued the decline that began in the second quarter of 1985. Since the first quarter of 1985, producibility has decreased about $6 \times 10^3 \text{m}^3/\text{d}$, or 4 per cent, to less than $145 \times 10^3 \text{m}^3/\text{d}$, as new discoveries have not offset the natural decline in producing reservoirs. Because much of the first quarter exploration and development activity was already in progress when crude oil prices began to drop, there was little negative impact on first-quarter producibility. However, the present rate of decline in Alberta could accelerate if prices remain low. Total light crude producibility fell by $3 \times 10^3 \text{m}^3/\text{d}$ to $167 \times 10^3 \text{m}^3/\text{d}$ as the capacity from other regions rose by about $3 \times 10^3 \text{m}^3/\text{d}$, to $22 \times 10^3 \text{m}^3/\text{d}$.

LIGHT CRUDE OIL PRODUCIBILITY



Production of synthetic oil from the Syncrude plant was well below capacity during the first quarter because the operation was on a partial maintenance program for much of the period. As a result, total synthetic oil production declined to 20 10³m³/d, compared with 28 10³m³/d in the first quarter of 1985.

The total supply of condensate was up about 4 per cent on a year-over-year basis, reflecting improved natural gas sales. However, because growth in condensate requirements for blending with heavy crude oil outstripped the growth in condensate supply, less was available as a refinery feedstock.

PRODUCTION AND SHUT-IN

Total crude oil production in the first quarter fell by 7 10³m³/d (2.8 per cent) from the same period a year earlier. Light crude and equivalent production declined almost 10 per cent, from 200 10³m³/d down to 181 10³m³/d, reflecting the previously mentioned fall in synthetic oil production and higher levels of shut-in. Heavy crude oil production continued to rise, reaching 62 10³m³/d, which was up 12 10³m³/d from the first quarter of 1985.

Shut-in almost doubled on a year-over-year basis, to 22 10³m³/d. Heavy crude shut-in doubled to 8 10³m³/d (about 12 per cent of producibility), and 14 10³m³/d of light conventional crude (about 8 per cent of capacity) was not produced. The impact of falling crude oil prices on crude oil demand is difficult to quantify in the short term, but part of the shut-in can certainly be attributed to it.

International crude oil prices dropped precipitously from January through March 1986. The average price posted by Canadian refiners dropped by more than half from about C\$214/m³ (C\$34/bbl) in January to C\$105/m³ (C\$16.50/bbl) by the

end of March. Because of the sharpness and duration of the price decline in late January and February many refiners, both Canadian and American, chose to draw down inventories or defer crude purchases in hopes of realizing even lower crude costs. This strategy contributed to high shut-in levels, especially in February and March.

As a result, through most of the first quarter there was spare pipeline capacity on both the Trans Mountain and Interprovincial Pipe Line systems. In January, however, pipeline capacity constraints contributed to some shut-in.

Sales of light crude oil from Alberta through its supplementary system grew to $13 \times 10^3 \text{ m}^3/\text{d}$ (almost 8 per cent of productive capacity), up from $6 \times 10^3 \text{ m}^3/\text{d}$ in the fourth quarter of 1985. Because crude oil prices were falling, and arrangements for supplementary sales took place after monthly light crude demand levels in Alberta were established, most supplemental sales occurred at prices lower than prevailing posted prices during this period. If the supplementary sales system for marketing Alberta crude oil had not been in place, conventional light crude oil shut-in would have been 16 per cent ($27 \times 10^3 \text{ m}^3/\text{d}$) of light oil productive capacity.

Appendices 5 and 6 compare the capacity and disposition of domestic crude oil in the first quarter of 1986 with those of 1985.

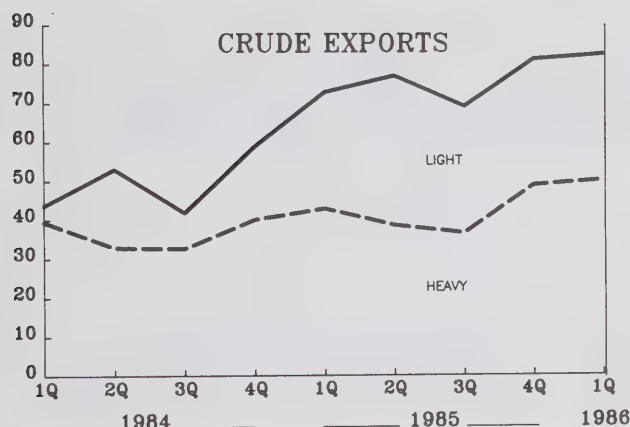
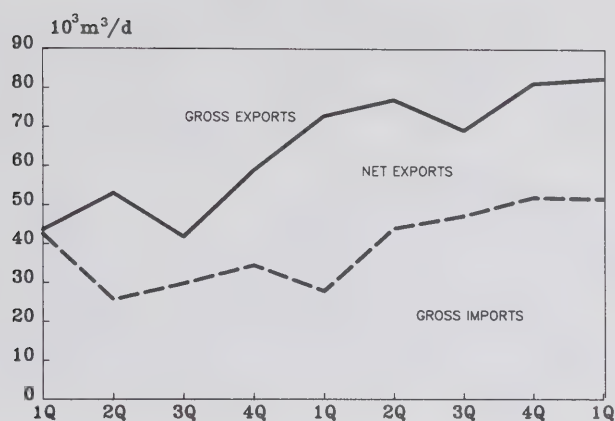
EXPORTS AND IMPORTS

The share of crude oil and net refined oil product imports, as a percentage of domestic oil consumption, jumped to 24 per cent in the first quarter of 1986 from 8 per cent a year earlier. Over the first quarter of 1986, crude oil imports averaged almost $52 \times 10^3 \text{ m}^3/\text{d}$, double the 1985 level. This primarily reflects the end of the Atlantic domestic crude oil program (transfer subsidy under the regulated pricing system), as well as opportunities to purchase lower priced offshore crude oil.

Crude oil exports over the same period remained relatively high at $82.5 \times 10^3 \text{ m}^3/\text{d}$, slightly above fourth-quarter 1985 levels. However, in comparison with crude oil exports a year ago, exports were up by 13 per cent. Most of this increase can be attributed to higher heavy crude oil exports. The share between conventional light crude oil and equivalent and heavy crude oil was approximately 40 per cent and 60 per cent, respectively. Gross crude oil exports represented about 33 per cent of total first-quarter crude oil and equivalent production (13 per cent on a net export basis).

During the first quarter of 1986 there were some significant changes in normal refined oil product import-export flows, reflecting both deregulation and Canadian-U.S. price differentials. Total refined oil product imports averaged $17 \times 10^3 \text{ m}^3/\text{d}$, up 35 per cent from 1985, and exports at $19 \times 10^3 \text{ m}^3/\text{d}$ were down 18 per cent. In the Atlantic region exports of light products were up sharply, reflecting processing of crude oil for reexport as product. In Quebec total imports of both gasoline and diesel fuel oil more than doubled over last year's. In Ontario exports of all products were almost half of 1985 levels, reflecting both price differentials and the end of the regulated price regime. Exports of gasoline and diesel out of British Columbia were off sharply, reflecting the same difficulties as in Ontario.

CRUDE OIL EXPORTS/IMPORTS

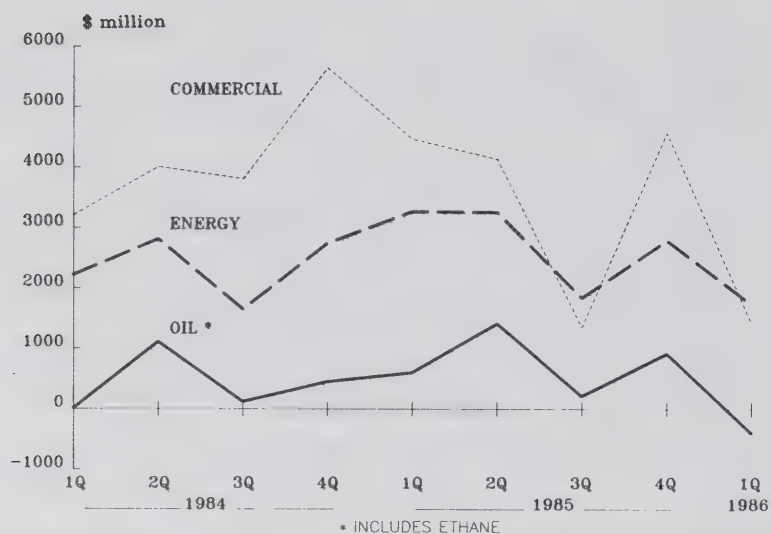


OIL TRADE BALANCE

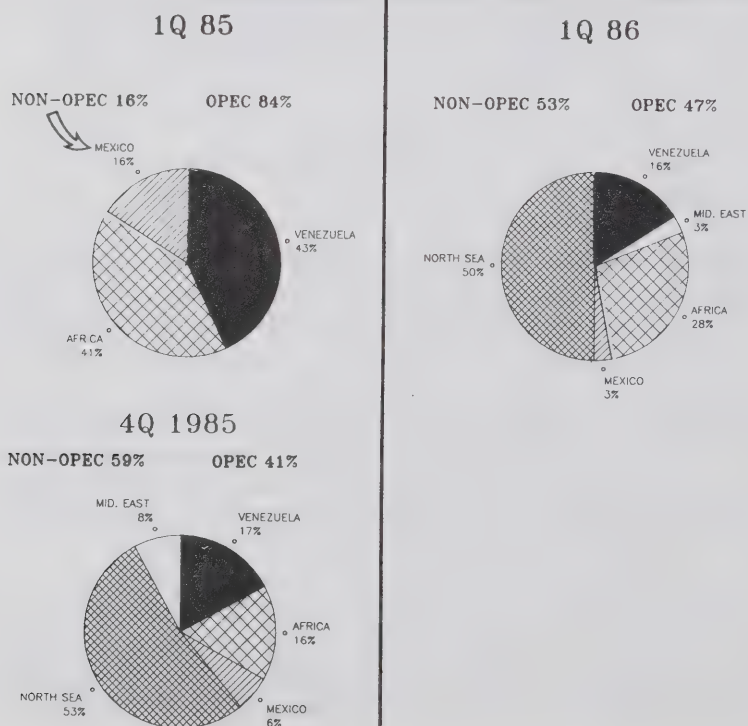
For the first quarter of 1986 oil trade (including refined oil products) registered a deficit of almost \$400 million, despite a volumetric surplus of more than 12.5 10³m³/d. There are several reasons for this apparent anomaly. First, the average value of Canadian crude oil exports at any time is decreased by the large share of cheaper heavy crude oil exports. Second, when oil prices in general are falling rapidly, the shorter time for Canadian exports to reach the border, compared with imports into eastern Canada, results in higher average values for imports. When import prices are compared with export values, on a quality- and time-adjusted basis, prices are roughly comparable. It is interesting to note that for the first time since 1982 a deficit was recorded on oil trade.

In contrast, total energy trade recorded a surplus of \$1.7 billion over the first quarter. However, it was down considerably from the \$3.3 billion surplus registered in the same period a year earlier, reflecting the deterioration in oil trade. At the same time, the total merchandise trade balance fell by over \$3 billion, to \$1.4 billion.

OIL AND ENERGY TRADE BALANCE (QUARTERLY)



IMPORT MARKET SHARES



SOURCES OF CRUDE OIL IMPORTS

As noted earlier, crude oil imports during the first quarter of 1986 rose sharply (87 per cent), to almost $52 \times 10^3 \text{m}^3/\text{d}$, from the same period a year ago. Approximately 60 per cent of this increase occurred in the Atlantic Provinces, reflecting both the termination of the Atlantic transfer program and volumes imported for refining and reexport.

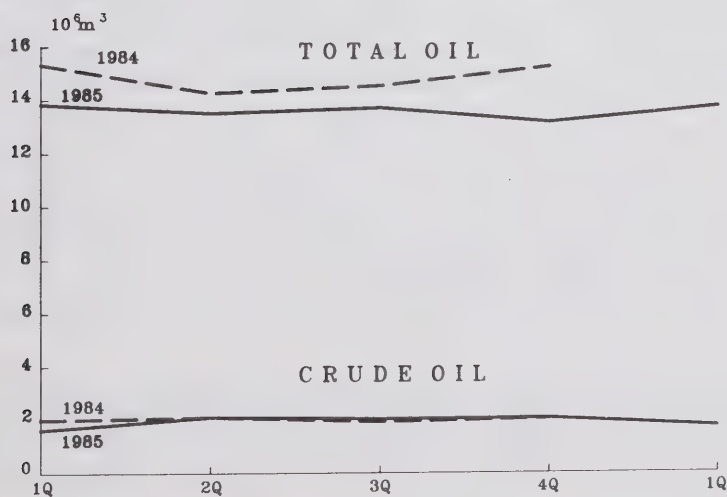
Import sources remained relatively unchanged from the fourth quarter of 1985. Fifty-three per cent of total crude oil imports came from the non-OPEC countries and the remaining 47 per cent were from OPEC countries. This reflects a slight change from the fourth quarter of 1985, when the split was 59 per cent non-OPEC and 41 per cent OPEC. The North Sea is still the source of the largest share of total crude oil imports at 50 per cent and imports from African countries, at 28 per cent, have replaced those from Venezuela as the second largest share.

INVENTORIES

Crude oil inventories closed the quarter at $1742 \times 10^3 \text{m}^3$, 7 per cent above 1985 levels. Refiners drew down crude stocks over the quarter at the rate of $3.6 \times 10^3 \text{m}^3/\text{d}$, which may have been partly in anticipation of lower crude prices.

Closing inventories of refined oil products in March were at about the same level as one year prior. Over the quarter, inventory built at almost $12 \times 10^3 \text{m}^3/\text{d}$, whereas product inventories usually fall over the first quarter. This change partly reflected the continuing fall in oil product consumption, higher product imports and reduced product exports. Apparently some final consumers, particularly industrial, delayed their purchases until nearly the end of the quarter in anticipation of lower prices. This would also cause the level of inventories in the distribution system to rise somewhat.

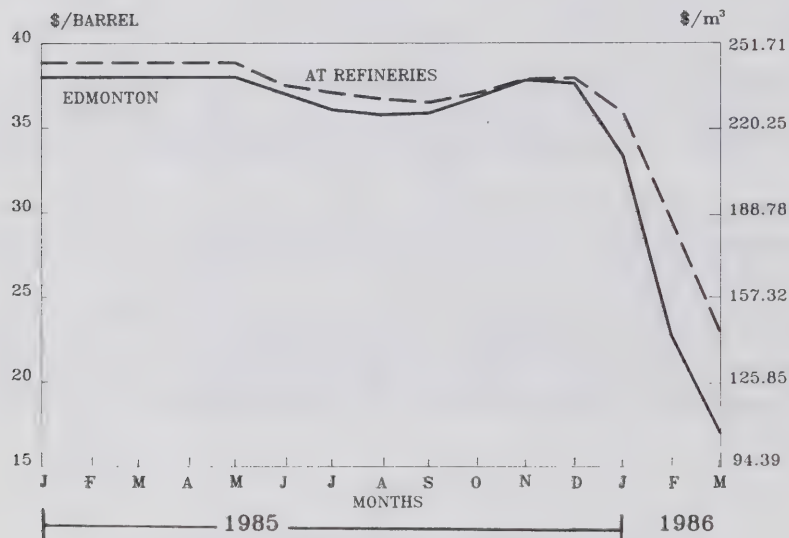
CLOSING OIL INVENTORIES



PRICES

Over the first quarter of 1986, crude oil prices plummeted. In March the average price paid for Canadian light crude at Edmonton had dropped to less than half the level at the end of 1985, reflecting similar movements in international oil markets. The average crude cost at refineries also fell sharply over the period, but with a slight lag, because of the time required to move the oil through the pipelines. By March average costs had fallen by almost 40 per cent from their level in December to about C\$145/m³ (C\$23/bbl). The decline in crude costs over the quarter is the equivalent of about 9.5¢/L.

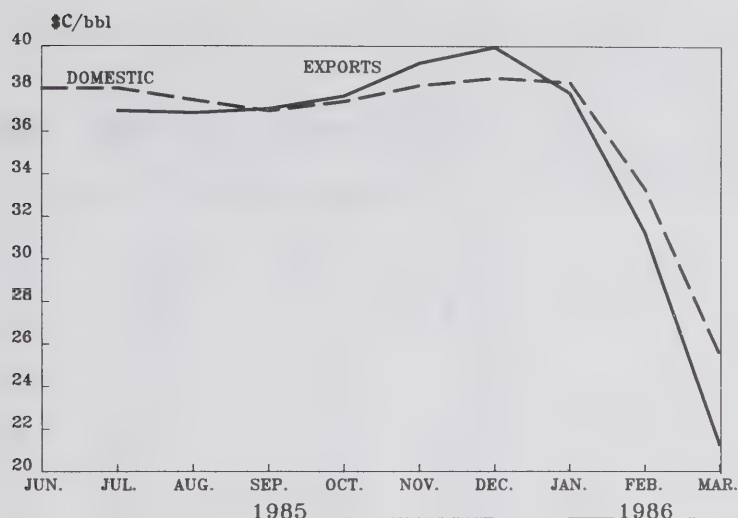
AVERAGE PRICES OF CANADIAN LIGHT CRUDE OIL



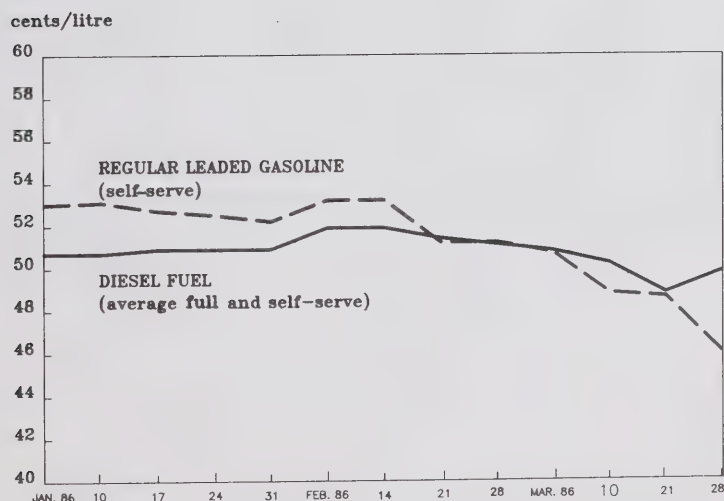
As crude oil prices fell, buyers and sellers discussed appropriate price levels in relation to various international market prices. The following graph compares average monthly values of light crude oil exports and costs of the equivalent crude to Ontario refiners since deregulation. Both series are adjusted to a common quality at Edmonton, and to compensate for different pipeline costs; however, there is still a time lag differential since crude oil moving to the export market would typically arrive a week or two earlier than the same crude moving to the Ontario market. Given those data limitations, export prices appear higher late in 1985 when crude prices were rising, then generally lower during the first quarter when crude prices were falling. At least part of this relationship may be explained by the above-mentioned time lag. Once crude oil prices stabilize, the gap should narrow accordingly.

In line with the drop in crude oil prices, retail prices also started to fall during the quarter, but with a lag. Average retail gasoline prices fell by about 2¢/L from December through early March (see Appendix 1). Changes in provincial taxes on gasoline were relatively minor, leaving the average unchanged. Federal taxes, however, rose 0.3¢/L (see Appendix 2).

CANADIAN LIGHT CRUDE EXPORT AND ONTARIO AVERAGE ACQUISITION VALUES



CANADIAN AVERAGE AUTOMOTIVE FUEL PRICES REGULAR LEADED GASOLINE VS. DIESEL FUEL



By the end of the quarter, the rate of decline in average gasoline prices had started to accelerate as earlier crude cost reductions worked their way through the system. Average gasoline prices declined by about 7¢/L between the first week in January and the last week in March. Also, the rate of decline in diesel fuel prices over the period was much less than for gasoline (about 1¢/L), partly reflecting the more competitive gasoline market.

Appendix 1

AVERAGE RETAIL PRICES, REGULAR LEADED GASOLINE, 1985-86

	June	September	December	March	Change, Last 12 Months
	(Canadian cents per litre)				(%)
St. John's	58.0	59.8	61.8	61.5	5.5
Charlottetown	56.0	57.9	58.5	57.8	0.9
Halifax	56.0	57.7	58.1	56.7	0.7
Saint John	49.2	55.9	59.8	60.4	9.2
Montreal	56.1	57.7	58.2	57.8	-2.4
Ottawa	50.0	51.1	52.2	51.5	2.2
Toronto	46.1	48.9	50.7	48.4	-1.2
Winnipeg	51.4	52.9	54.2	51.6	9.1
Regina	45.2	43.6	44.3	41.6	-9.0
Calgary	44.4	45.9	46.6	44.0	4.3
Vancouver	53.6	55.6	55.5	52.8	11.6
Canadian average	49.8	51.8	52.7	50.5	1.0
Consumption taxes included:					
- Federal	4.7	6.7	6.8	7.1	47.9
- Provincial	7.5	7.6	7.6	7.6	1.3

Appendix 2

CONSUMPTION TAXES ON PETROLEUM PRODUCTS, MARCH 1, 1986

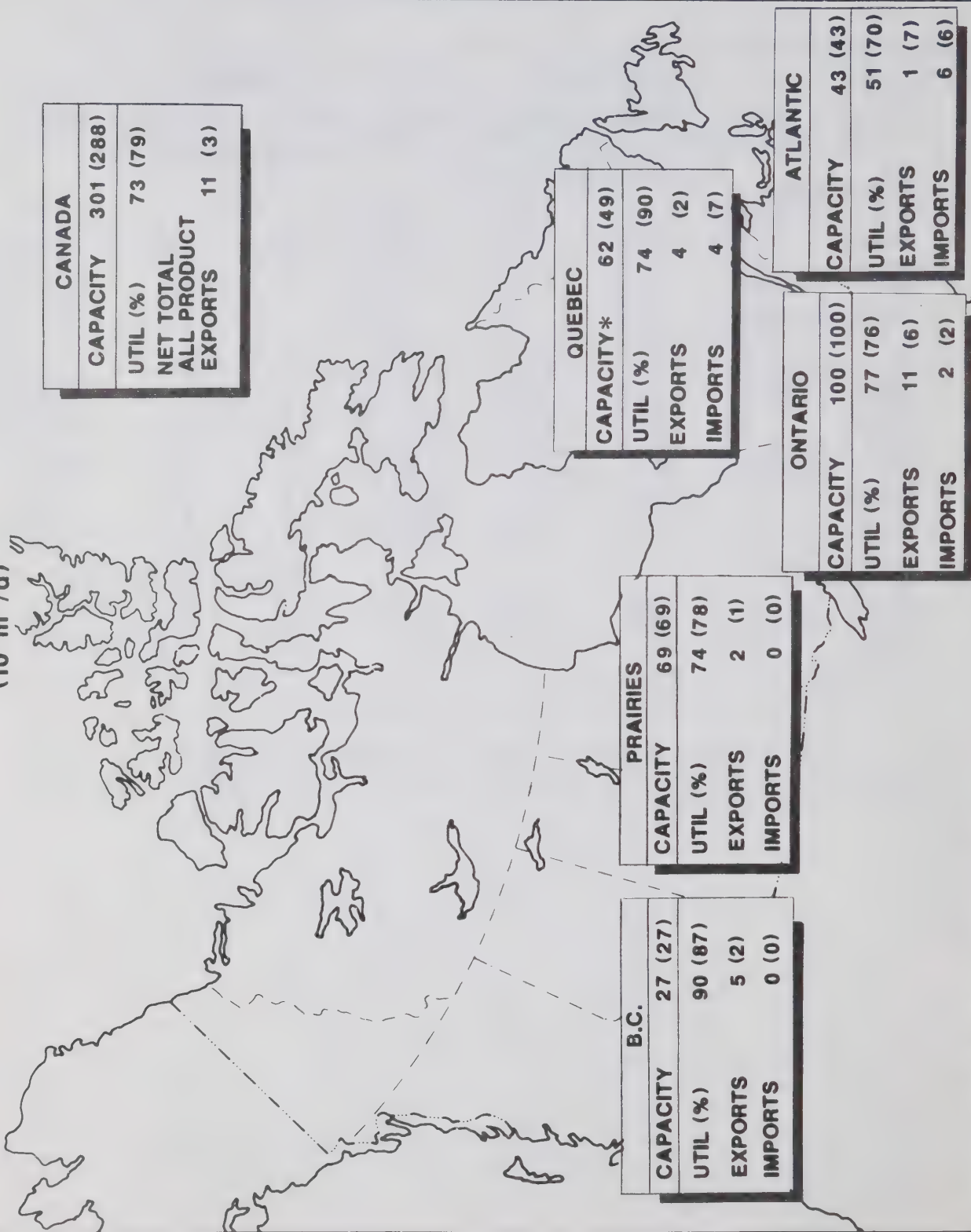
	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(per cent)		(cents per litre)			
<u>Federal Taxes</u>						
Sales(a)			3.62	3.96	4.07	3.32
Excise			3.5	3.5	3.5	2.0
<u>Provincial Taxes</u>						
Newfoundland	22	26	11.7	11.7	11.7	13.9
Prince Edward Island	20	23	10.3	10.3	10.3	11.7
Nova Scotia	20	21	9.7	9.7	9.7	9.8
New Brunswick	20	23	9.8	10.2	10.5	10.0
Quebec	30(b)	30	13.65	14.4	14.7	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba	-	-	8.9	8.0	8.0	9.2
Saskatchewan	-	-	-	-	-	-
Alberta	-	-	-	-	-	-
British Columbia	20(c)	20(c)	8.64	8.64	8.64	9.08
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	15	(d)	8.4	8.4	8.4	7.1

(a) Based on a specific amount per litre. (b) Reduced by one third within 5 km of the provincial border. (c) Additional transit tax of 0.95¢/L in Vancouver. (d) 85% of gasoline tax.

Appendix 3

REGIONAL REFINERY UTILIZATION

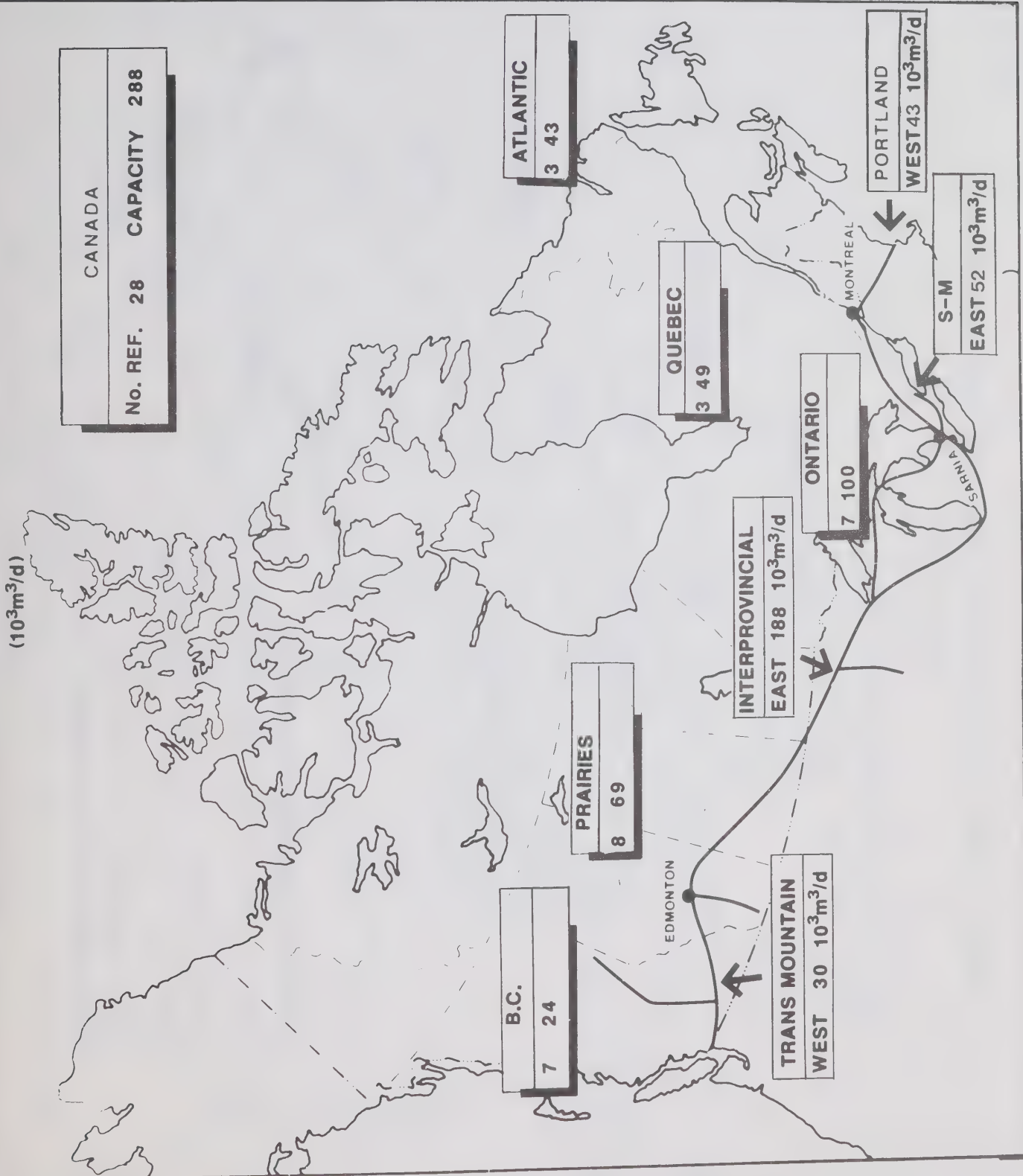
1985 (1Q/86)
(10³m³/d)



*EXCLUDES GULF MONTREAL REFINERY

Appendix 4

MAJOR PIPELINES AND REFINING CENTERS IN CANADA

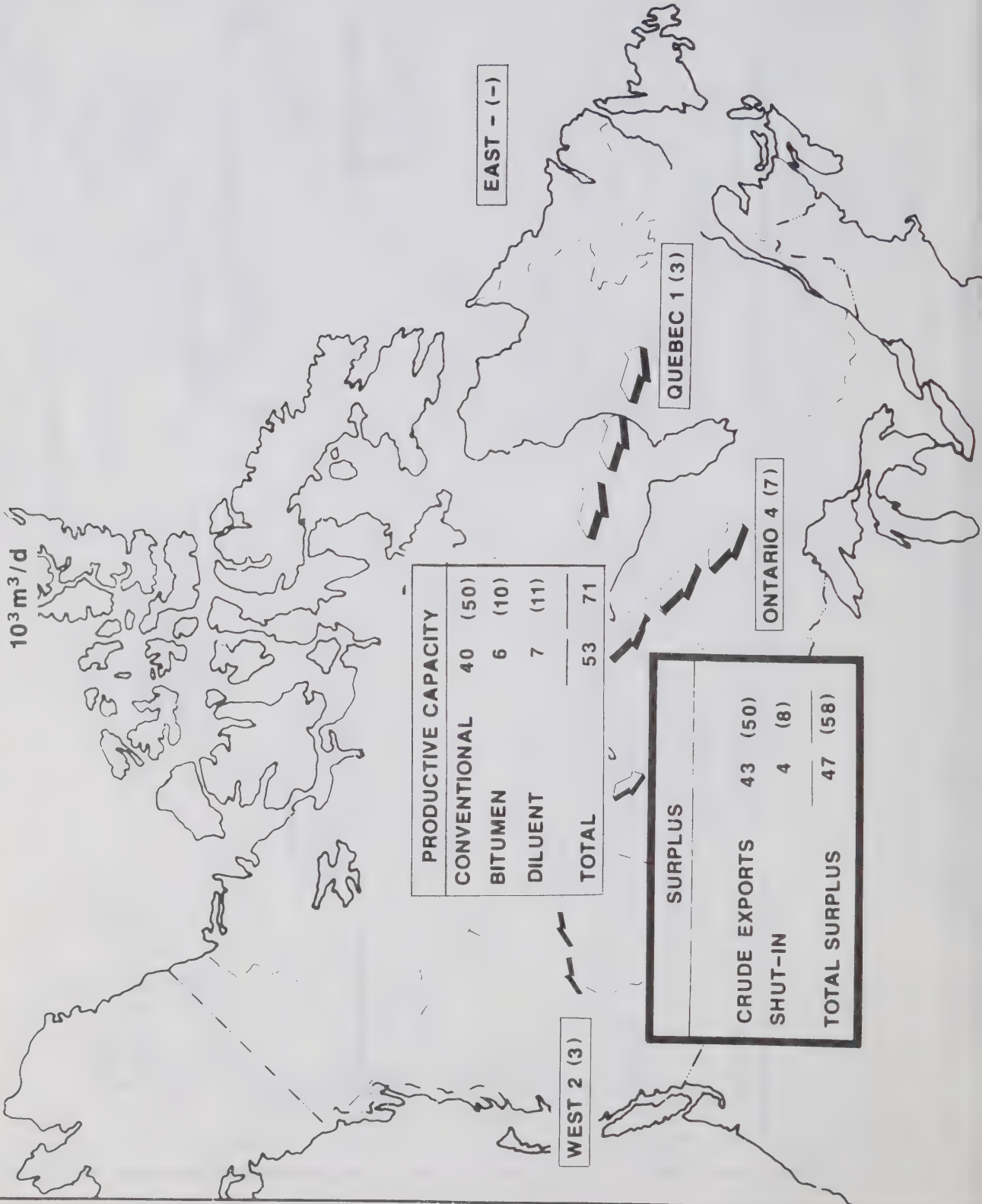


Appendix 5

HEAVY CRUDE OIL PRODUCTIVE CAPACITY AND DISPOSITION

1Q85/(1Q86)

$10^3 \text{ m}^3/\text{d}$



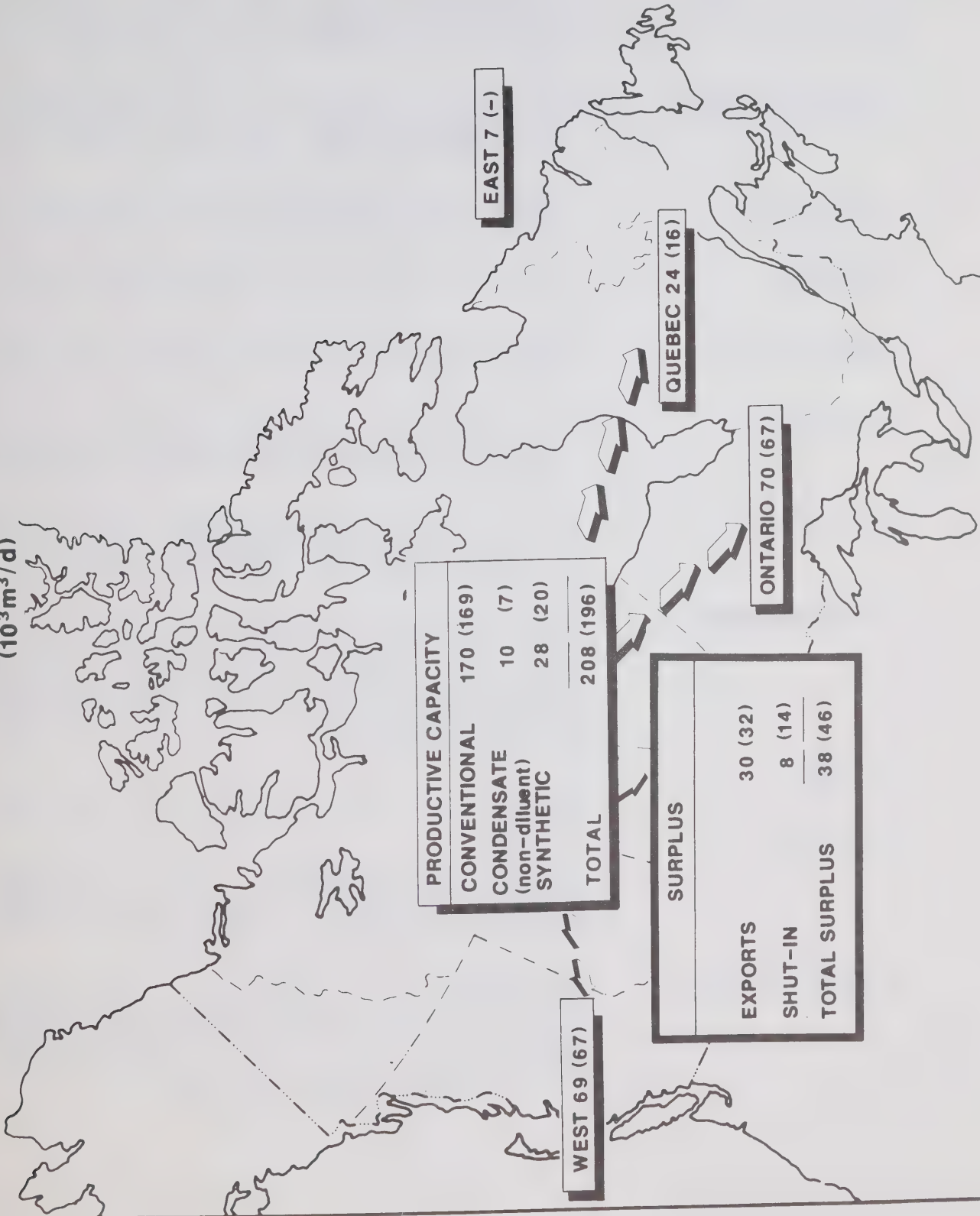
PRODUCTIVE CAPACITY	
CONVENTIONAL	40 (50)
BITUMEN	6 (10)
DILUENT	7 (11)
TOTAL	53 71

SURPLUS	
CRUDE EXPORTS	43 (50)
SHUT-IN	4 (8)
TOTAL SURPLUS	47 (58)

Appendix 6

LIGHT CRUDE OIL PRODUCTIVE CAPACITY AND DISPOSITION

1Q85/(1Q86)
(10³m³/d)



Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oils with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.
Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Glossary (continued)

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

and
Canada
Energy

Énergie, Mines et
Ressources Canada

L'Hon. Marcel Masse,
Ministre

CAI
MS
-C15
ENG

The Canadian Oil Market



Vol. II, No. 2 Second Quarter 1986

THE CANADIAN OIL MARKET

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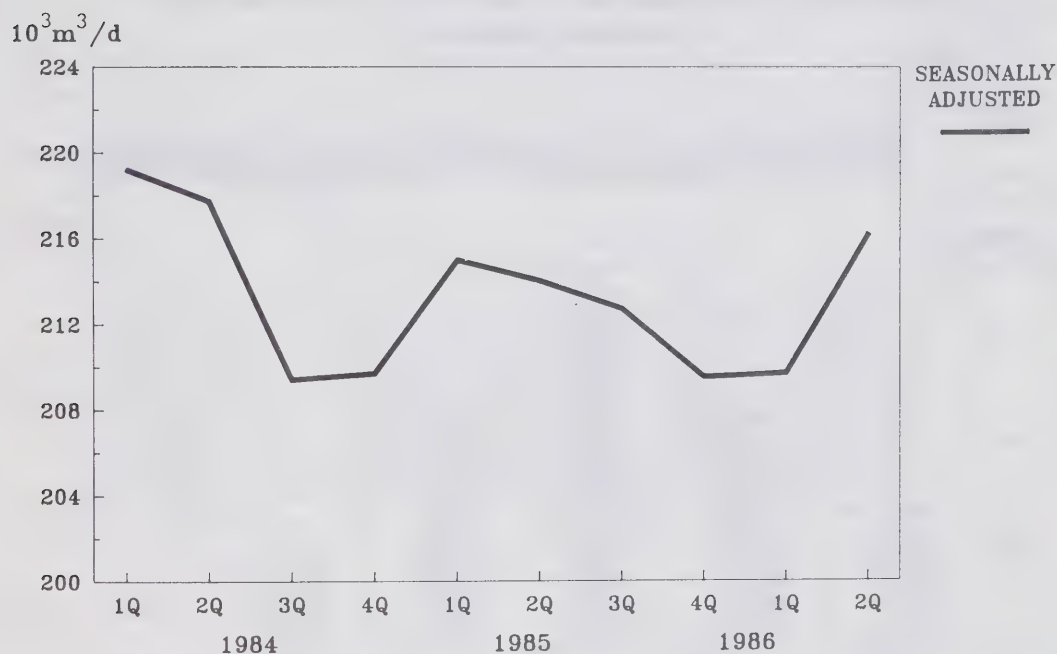
THE CANADIAN OIL MARKET

DOMESTIC DEMAND

Canadian oil product demand (seasonally adjusted), excluding product consumed in the refining process, rose 3.1% in the second quarter, after rising 0.1% during the first quarter 1986.

The increase in demand for heavy fuel oil, which rose about 29% in the second quarter, was particularly noticeable. Many large consumers with dual-firing capabilities can readily substitute fuel oil for other industrial fuels, such as natural gas, as the price relationship between fuels change. With the second quarter decline in refined oil product prices, many large heavy oil users may have switched to using heavy fuel oil as a fuel source. As well, gasoline demand grew, possibly reflecting lower prices.

TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



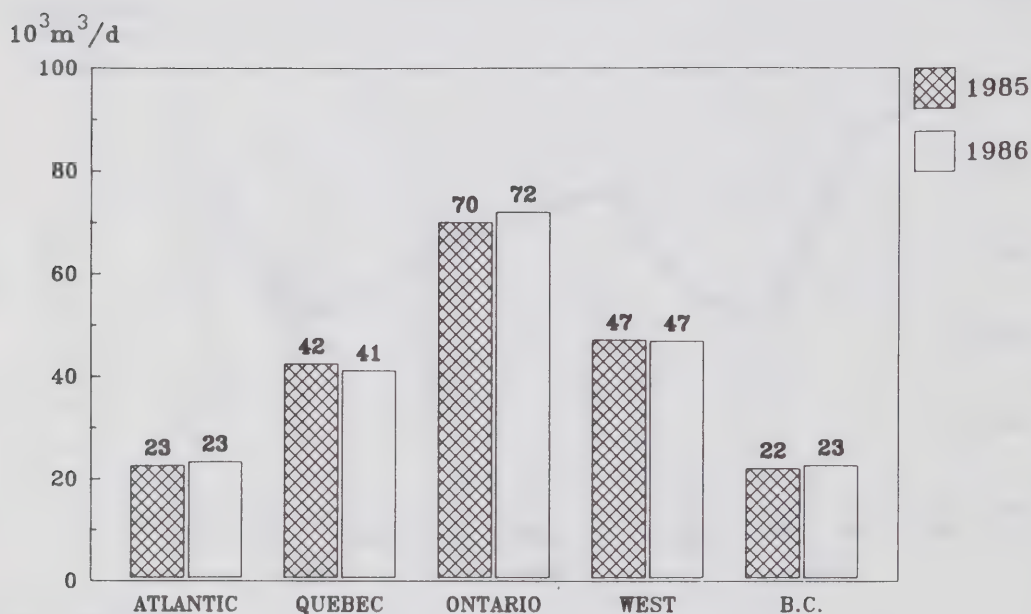
Source: Statistic Canada

Regionally, Ontario demand continues to grow at a rate above the national average, as a result of strong economic growth and the positive impact of lower prices on the Ontario industrial base. In the second quarter, Ontario demand was up nearly 3%, at $72 \times 10^3 \text{ m}^3/\text{d}$. During the first half of 1986, oil products consumption grew 2.8% in Ontario.

Two other regions also experienced substantial growth in oil demand. Total consumption rose 3.1% and 2.7%, respectively, in the Atlantic provinces and British Columbia. Much of the increase in these regions can also be attributed to the sharp rise in heavy fuel oil use.

On the other hand, demand in the Prairies declined marginally, while Quebec consumption also continued to drop, falling 3.1%. The further decrease of oil use in Quebec reflects the continued expansion of both natural gas and electricity as alternative energy sources.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Second Quarter)

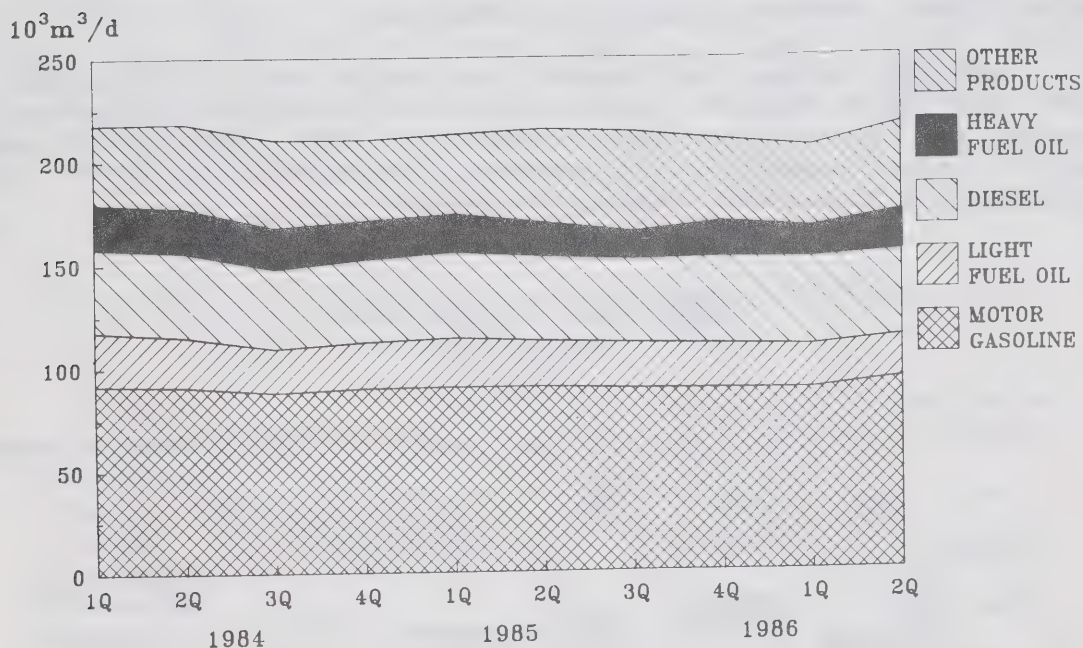


Source: Statistics Canada

On an individual product basis, as mentioned above, seasonally adjusted demand for both motor gasoline and heavy fuel oil increased, 5.4% and 29% respectively from the first quarter 1986. The heavy fuel oil increase, which equates to $3.9 \times 10^3 \text{ m}^3/\text{d}$, reflects substitution from other fuels (natural gas) and possible restocking by consumers anticipating that prices had bottomed in the second quarter. The increase in heavy fuel oil demand contrasts with the 16% decline in the first quarter, when consumers may have deferred purchases in anticipation of lower prices.

Heating oil consumption remained relatively unchanged from the previous quarter, and diesel demand fell 2.3%. Other products, such as petrochemical feedstocks, aviation turbo fuel and asphalt, which account for almost 20% of total product consumption, fell more than 3.5% as demand for petrochemical feedstocks, and to a lesser extent asphalt, declined.

PETROLEUM PRODUCT CONSUMPTION BY PRODUCT (Seasonally Adjusted)



Source: Statistics Canada

REFINERY UTILIZATION

Over the second quarter, Canadian refinery utilization declined by about 6 percentage points from the first quarter of 1986, to 72%*. This lower utilization rate basically reflects oil product demand being met by oil product inventory drawdowns (see Exports and Imports, and Inventories) and a

* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

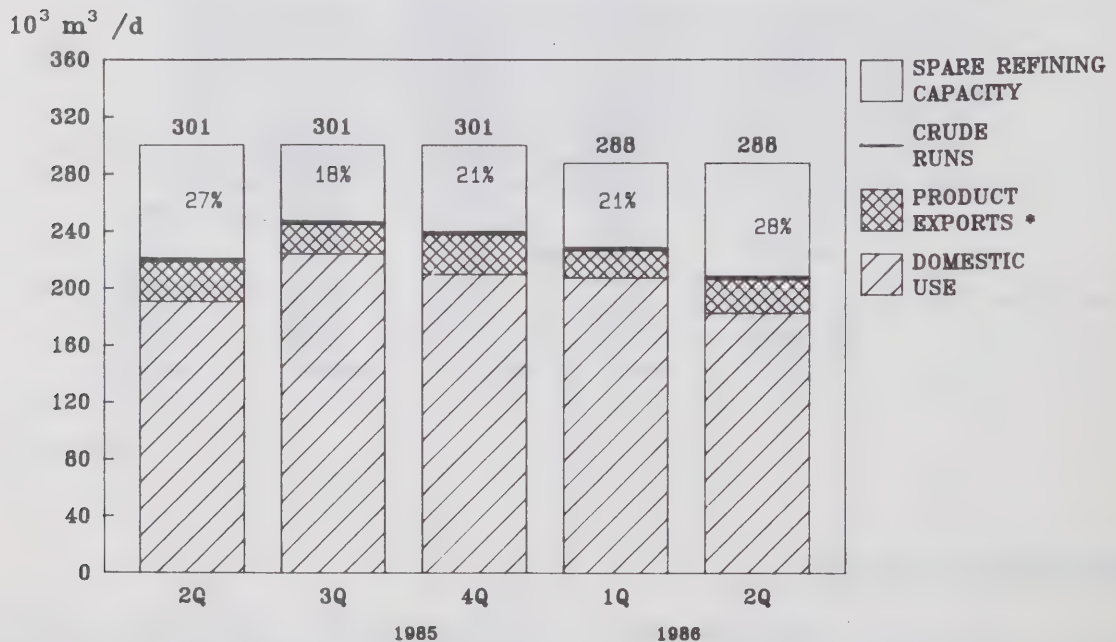
large number of refinery maintenance turnarounds in April and May. The largest quarter-over-quarter regional utilization drop occurred in Quebec, where capacity utilization fell from 90% to 71%.

Crude oil and equivalent runs (which generally include 8-10 $10^3\text{m}^3/\text{d}$ of LPG's and other feedstocks) averaged $207\ 10^3\text{m}^3/\text{d}$, down about 6% from a year ago. While crude runs have fallen on a year-over-year basis, capacity utilization rates have remained approximately the same (72%) because of the closure of the Gulf refinery in Quebec at the end of February 1986.

On a regional basis, second-quarter 1986 refinery utilization ranged from a high of 85% in British Columbia to a low of 58% in the Atlantic. The Atlantic region, which experienced the lowest rate of capacity utilization at 39% a year ago, demonstrated the greatest improvement over the year, up 19 percentage points. This change reflects a processing agreement, whereby crude oil imports are re-exported as oil products.

Although refinery utilization was up in the Atlantic, all other regions experienced declines. Ontario, in particular, at 72%, was down 8 percentage points versus the second quarter of 1985. This mainly reflects lower oil product exports to U.S. markets. Appendix 3 illustrates regional second quarter 1985 and 1986 refinery utilization.

REFINERY UTILIZATION



* ADJUSTED FOR REFINERY GAIN
Source: Statistics Canada

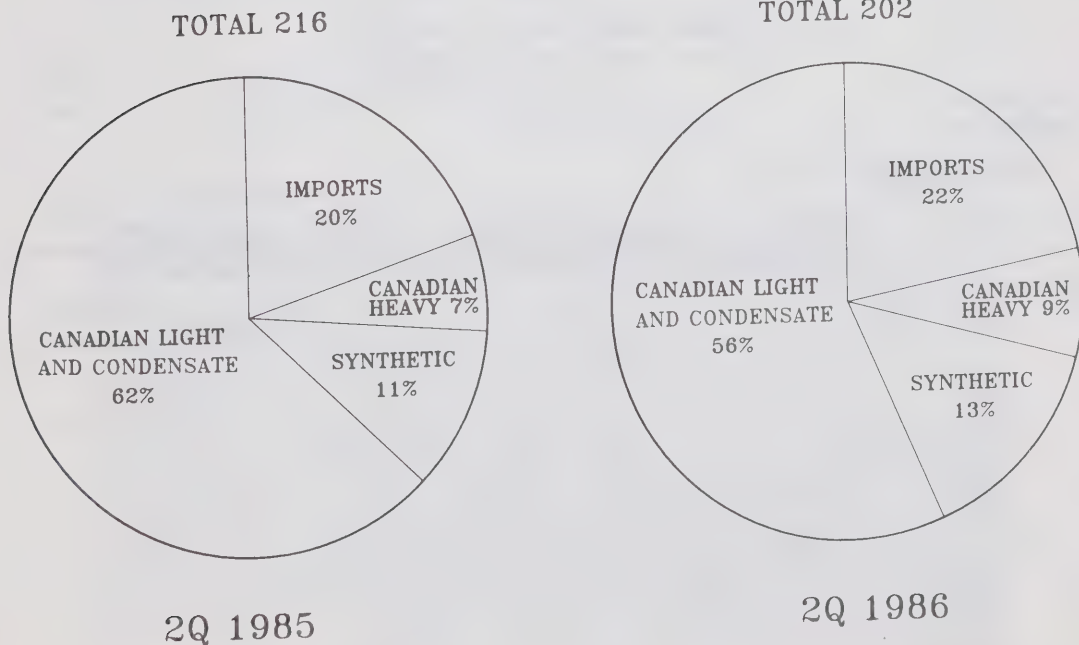
CRUDE OIL REQUIREMENTS

Total crude oil receipts at Canadian refineries dropped about 6%, to $202 \times 10^3 \text{ m}^3/\text{d}$ during the second quarter, reflecting a larger inventory drawdown, and a drop in net oil product exports, this year versus last. The drawdown of crude oil and petroleum products stocks was about $10 \times 10^3 \text{ m}^3/\text{d}$ greater than last year. While oil product imports remained at about the same level, product exports fell reflecting, in part, the deterioration in U.S. refined product prices.

All of the decline in crude oil requirements occurred in domestic crude oil receipts. Crude oil imports rose marginally, to about $45 \times 10^3 \text{ m}^3/\text{d}$, or 22% of total crude oil receipts. However, due to the substantial increase in imports during the first quarter, first half imports were 38% higher than the similar period in 1985.

Since the removal of regulatory incentives to utilize domestic crude oil in eastern Canada in June, 1985, receipts of domestic light crude and equivalent have declined to about 70% of total Canadian feedstock requirements. This trend continued through the second quarter of 1986. Canadian heavy crude utilization, however, rose to over 9% of total use, an increase of $3 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL RECEIVED AT CANADIAN REFINERIES ($10^3 \text{ m}^3/\text{d}$)



MONTREAL CRUDE USE

Since 1976, when the Sarnia-Montreal extension of the Interprovincial (IPL) Pipeline was completed, Montreal refineries have been pipeline-connected to both domestic and foreign crude oil sources.

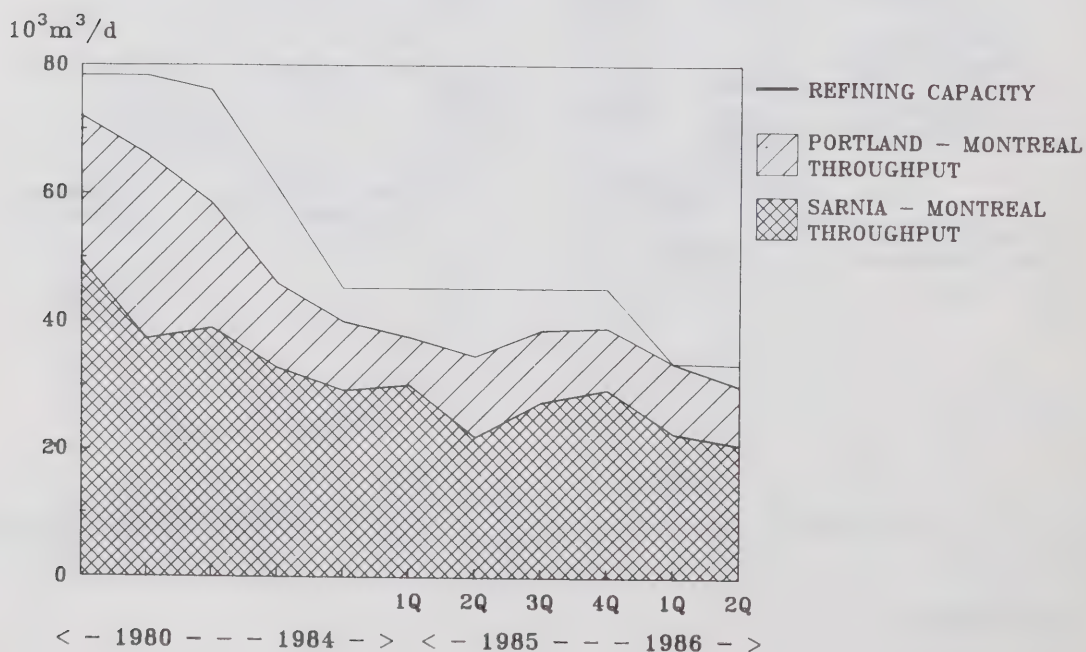
Sarnia-Montreal throughput capacity for domestic light and heavy crude oil is about $52 \times 10^3 \text{ m}^3/\text{d}$. Maximum throughput of $49 \times 10^3 \text{ m}^3/\text{d}$ was reached in 1979 and 1980. Since then, throughput has declined steadily, as refined product demand in Quebec has fallen about 40%. As a result, over the last six years four of the six refineries in Montreal have been closed.

Throughput has also fallen since deregulation and the elimination of the Atlantic transfer program which subsidized the movement of domestic crude oil to refineries east of Montreal. In the second quarter, 1986, Sarnia-Montreal throughput averaged $21 \times 10^3 \text{ m}^3/\text{d}$, a drop of $3 \times 10^3 \text{ m}^3/\text{d}$ from 1985.

The Portland-Montreal pipeline, which was constructed in 1941 and is used to transport imported crude oil, runs from Portland, Maine to Montreal. Prior to the completion of the Sarnia-Montreal line, the Portland system had a throughput capacity of $87 \times 10^3 \text{ m}^3/\text{d}$ with three operational lines. With the extension of the Interprovincial line, Portland capacity was reduced to $47 \times 10^3 \text{ m}^3/\text{d}$. In 1982, one line was deactivated thereby further reducing capacity to $43 \times 10^3 \text{ m}^3/\text{d}$.

The decline in oil consumption and refinery closures have continued to reduce throughput requirements on the Portland Pipeline. Over the last three years throughput has rarely exceeded $13 \times 10^3 \text{ m}^3/\text{d}$. Since 1986 only

MONTREAL REFINING CAPACITY AND PIPELINE THROUGHPUT



the largest line (30 $10^3\text{m}^3/\text{d}$) has been operational. In the second quarter 1986, imports via the Portland pipeline averaged less than 9 $10^3\text{m}^3/\text{d}$, a 10% decline from the second quarter 1985.

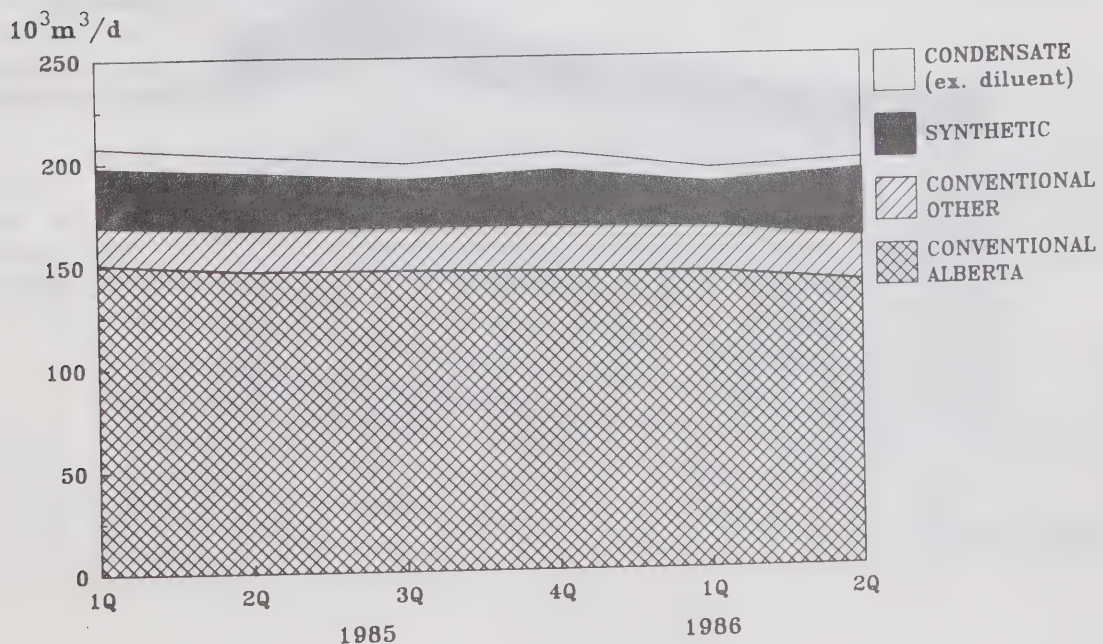
PRODUCIBILITY

Despite some reduction in available supply as a result of low crude oil prices, and the continued decline in Alberta conventional light oil producibility, total productive capacity of crude oil and equivalent was up nearly 6 $10^3\text{m}^3/\text{d}$, to 262 $10^3\text{m}^3/\text{d}$, over the second quarter of 1986. All of this increase is attributable to the rise in heavy crude supply and record synthetic crude oil production.

The drop in oil prices in the first quarter began to affect exploration and development activity in the second quarter, leading to reductions in productive capacity estimates from previous forecasts, for both light and heavy crude oil.

Alberta conventional light oil capacity in the second quarter was reduced by about 1 $10^3\text{m}^3/\text{d}$ as a result of lower prices. The natural decline in producing fields also contributed to a decrease of over 8 $10^3\text{m}^3/\text{d}$, to about 139 $10^3\text{m}^3/\text{d}$, in Alberta light crude supply on a year-over-year basis. Capacity from other regions in Canada has remained unchanged since the third quarter 1985, at 22 $10^3\text{m}^3/\text{d}$, an increase of 2 $10^3\text{m}^3/\text{d}$ from the second quarter 1985. Overall, Canadian light conventional crude producibility fell 6 $10^3\text{m}^3/\text{d}$, to just under 161 $10^3\text{m}^3/\text{d}$.

LIGHT CRUDE OIL AND EQUIVALENT PRODUCIBILITY

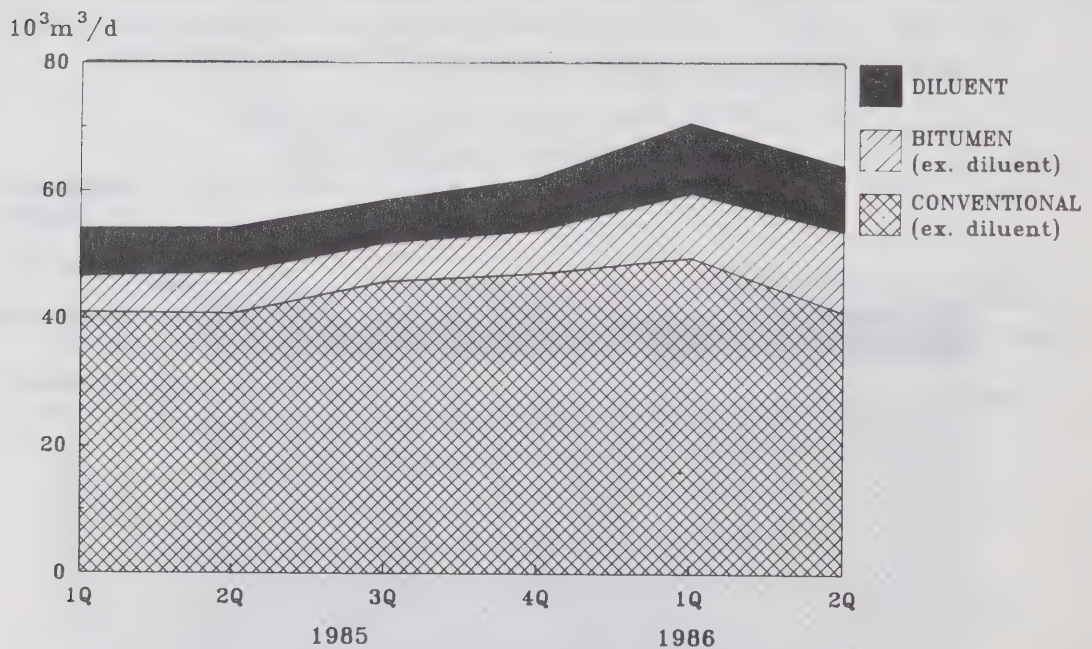


Both Suncor and Syncrude set record quarterly production levels in the second quarter, as neither plant experienced operational problems. Production was over $32 \times 10^3 \text{ m}^3/\text{d}$, compared to $27 \times 10^3 \text{ m}^3/\text{d}$ in the second quarter 1985, and $20 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter of this year.

Although condensate supply was up marginally on a year-over-year basis, diluent requirements rose almost 50%, to $10 \times 10^3 \text{ m}^3/\text{d}$, leaving less than $6 \times 10^3 \text{ m}^3/\text{d}$ available for refinery feedstocks or other non-diluent purposes.

Although heavy crude oil availability was up almost $10 \times 10^3 \text{ m}^3/\text{d}$ over the second quarter 1985 reflecting growth in bitumen supply (including diluent), it dropped $6 \times 10^3 \text{ m}^3/\text{d}$ from the first quarter 1986. Historically, both heavy and light crude availability fall in April and May due to road restrictions associated with spring breakup. As well, several companies announced reductions in heavy crude production and slowdowns in bitumen development as a result of lower crude prices. Total shut-in uneconomic capacity was estimated at about $2\text{--}3 \times 10^3 \text{ m}^3/\text{d}$ during the second quarter. However, some of this capacity was reactivated in June, in reaction to improvements in provincial tax and royalty structures in the producing provinces.

HEAVY CRUDE OIL PRODUCIBILITY



Source: National Energy Board

PRODUCTION AND SHUT-IN

The divergent trend in light and heavy crude oil producibility growth was also evident in actual production levels during second quarter, 1986. While light crude oil and equivalent production fell $9 \times 10^3 \text{ m}^3/\text{d}$, to about $184 \times 10^3 \text{ m}^3/\text{d}$, heavy crude output was up almost $10 \times 10^3 \text{ m}^3/\text{d}$, to $63 \times 10^3 \text{ m}^3/\text{d}$. Total oil production rose marginally ($2 \times 10^3 \text{ m}^3/\text{d}$) to $247 \times 10^3 \text{ m}^3/\text{d}$.

Light crude shut-in increased to $15 \times 10^3 \text{ m}^3/\text{d}$, a 45% rise from a year earlier. Pipeline capacity constraints and, to a lesser extent, lack of refiner demand contributed to this shut-in. As March and April are traditional turnaround and maintenance periods for Canadian refiners, demand for domestic crude is generally at its lowest level during these months. However, lack of pipeline capacity continued to limit light crude production, particularly on the Interprovincial Pipe Line and Rangeland systems. Only Trans Mountain had some spare pipeline capacity (about $3 \times 10^3 \text{ m}^3/\text{d}$) in the second quarter. However, additional export sales via Trans Mountain generally involve a substantial discount compared to prices available in other (pipeline-constrained) markets.

Supplementary sales of Alberta light crude oil to the export market averaged over $11 \times 10^3 \text{ m}^3/\text{d}$ during the second quarter, down from $13 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter of 1986. As a result, the shut-in of conventional light crude was reduced to 9.5% of conventional capacity. Shut-in would have been $27 \times 10^3 \text{ m}^3/\text{d}$ (17% of conventional capacity) without the supplementary sales system. The maps in appendixes 5 and 6 illustrate domestic crude oil capacity and disposition in the second quarter of 1985 and 1986.

Heavy crude shut-in was marginal in the April to June period, reflecting seasonally-lower productive capacity and an increase in export demand.

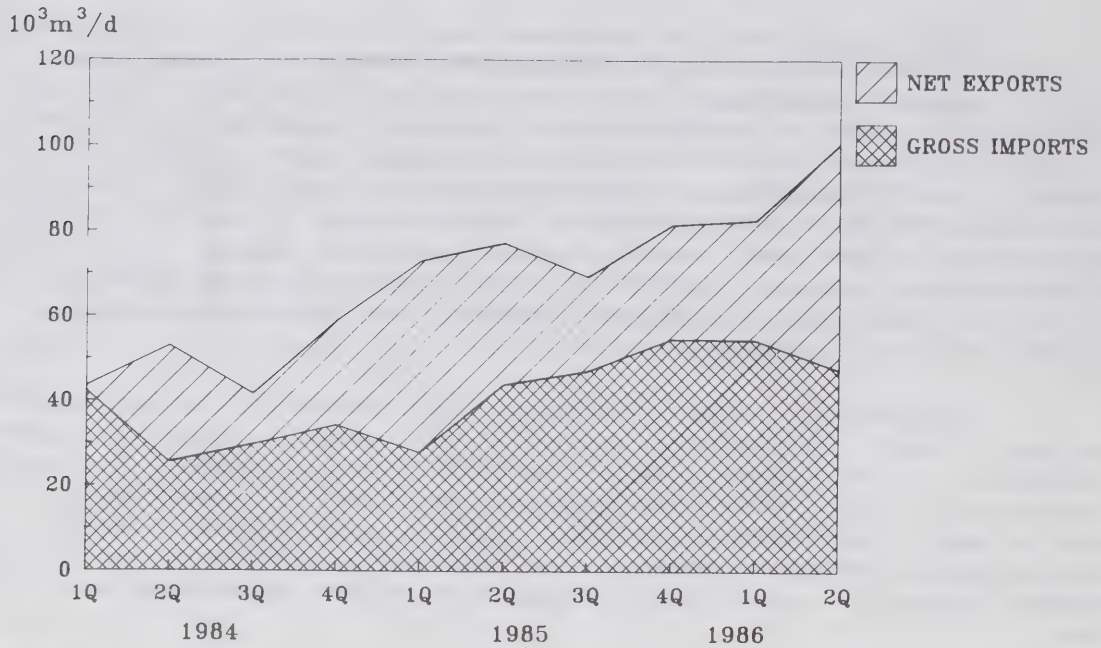
EXPORTS AND IMPORTS

Crude oil exports rose almost one third from the period a year earlier, to over $100 \times 10^3 \text{ m}^3/\text{d}$. This represents more than 40% of Canadian crude oil and equivalent production. It was been over a decade since export volumes have been at this level. However, with light crude oil capacity expected to decline, exports are likely to be on a downward trend over the remainder of the decade.

Light crude oil and equivalent exports in the second quarter jumped by more than 50%, from the January to March 1986 period, to $50 \times 10^3 \text{ m}^3/\text{d}$, and by $12 \times 10^3 \text{ m}^3/\text{d}$ from second quarter 1985. This increase results from a reduction in domestic crude requirements rather than a rise in production. Canadian refined product inventories were reduced substantially in the second quarter, on both a year-over-year and quarter-over-quarter basis. Much of the inventory decline relates to refiners' efforts to rationalize oil stocks in

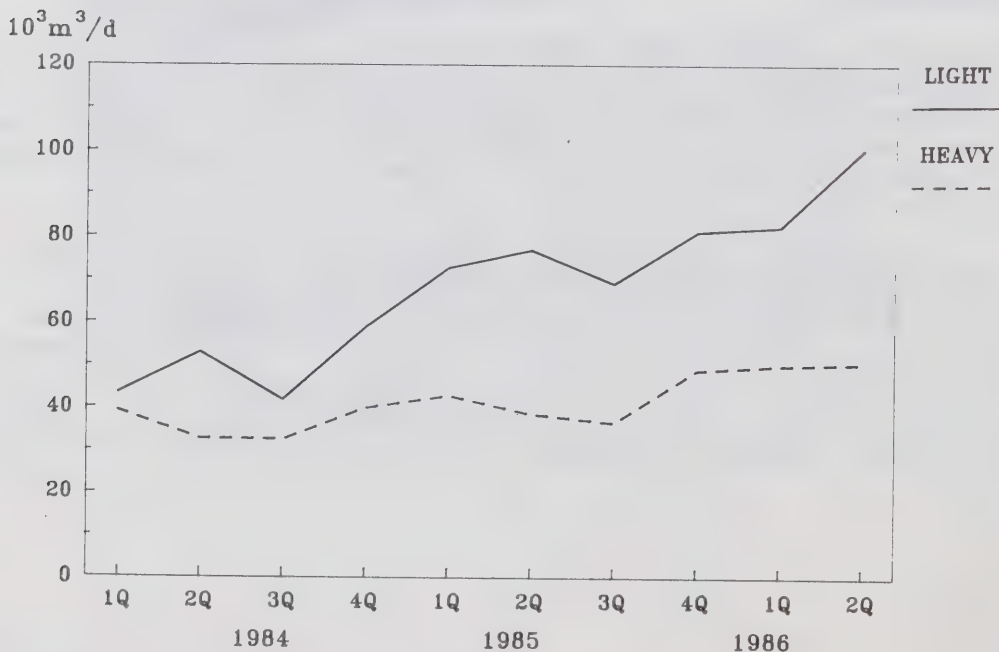
the face of declining and volatile prices. The inventory drawdown resulted in a reduction in domestic light crude oil requirements, thus freeing up supply for the export market. The second quarter surge in light crude oil exports is therefore likely to be only short-term in nature, reflecting a temporary change in domestic supply needs.

CRUDE OIL EXPORTS - IMPORTS



Source: National Energy Board

CRUDE EXPORTS



Source: National Energy Board

With all of incremental heavy crude oil production being exported, heavy crude oil exports rose $12 \text{ } 10^3\text{m}^3/\text{d}$ from second quarter 1985, to $50 \text{ } 10^3\text{m}^3/\text{d}$, but remained unchanged from the first quarter 1986, due to the previously mentioned short-term decline in heavy crude oil producibility.

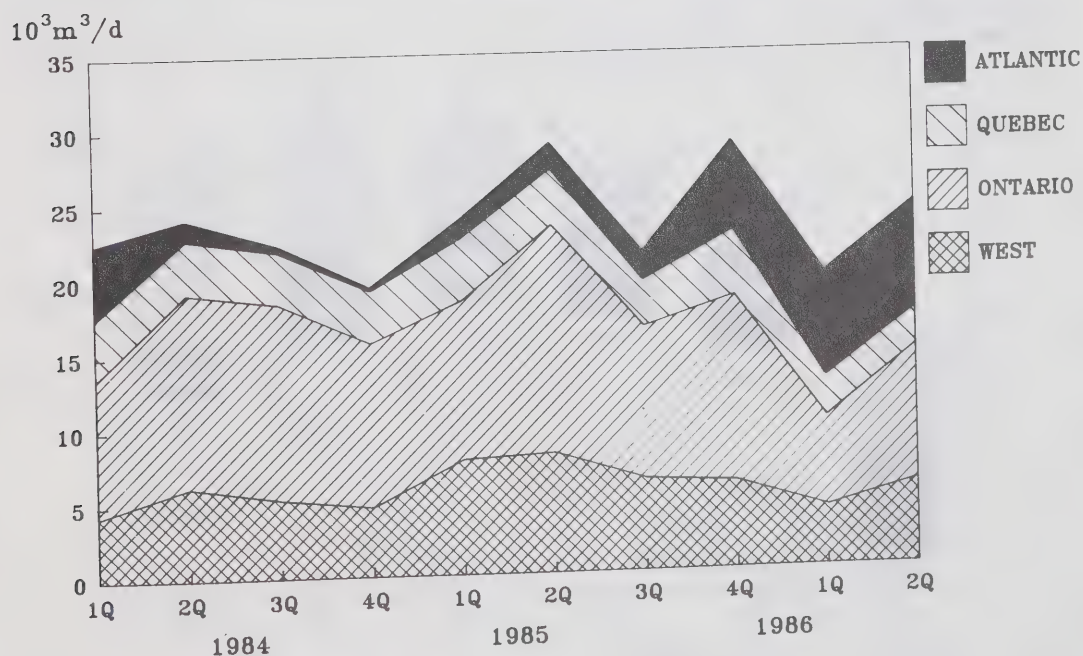
During second quarter 1986, crude oil imports were $45 \text{ } 10^3\text{m}^3/\text{d}$, unchanged from a year earlier, but down about $9 \text{ } 10^3\text{m}^3/\text{d}$ from the first quarter. Crude oil and net refined oil product imports, as a percentage of domestic oil consumption, stood at 18%, versus about 15% last year.

Since deregulation and, the later drop in oil prices, there have been significant shifts in petroleum product trade, particularly with respect to exports. Oil product imports averaged $15 \text{ } 10^3\text{m}^3/\text{d}$ in the second quarter, down marginally from a year earlier. Exports also fell, 14%, to $25 \text{ } 10^3\text{m}^3/\text{d}$ from the second quarter 1985.

However, there was a dramatic change in exports by region. Exports from Quebec, Ontario and the Prairies dropped nearly 40% indicating the difficulty Canadian refiners experienced in competing in volatile, falling U.S. product markets. In contrast, exports from the Atlantic region more than quadrupled, to over $7 \text{ } 10^3\text{m}^3/\text{d}$ reflecting additional volumes under an export processing arrangement.

With respect to product exports, on a quarter-over-quarter basis, the seasonal trend at the last few years continued in 1986, as exports rose 22% in the second quarter 1986, over first quarter 1986. As has been the case in other years, most of the seasonal export growth occurred in Ontario and the four western provinces.

REGIONAL PETROLEUM PRODUCT EXPORTS



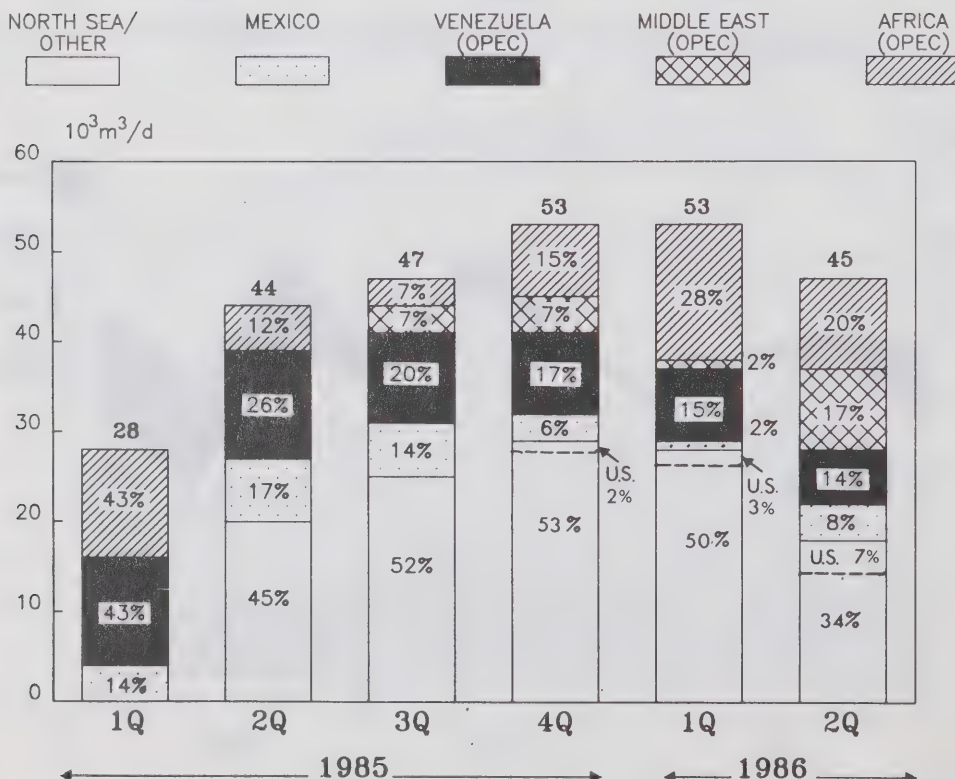
SOURCES OF CRUDE OIL IMPORTS

Imports of crude oil in the second quarter 1986 rose by 3%, to 45 $10^3\text{m}^3/\text{d}$, compared to the second quarter of 1985. Crude oil imports were split almost equally between OPEC and non-OPEC sources (a ratio of 51:49). This compares with a 38:62 ratio over the same period a year earlier and 45:55 in the first quarter 1986. The move to more market-responsive prices by OPEC in late 1985 has lead to increases in it's share of the Canadian import market. The trend is similar to that experienced by other importers, such as the U.S.

OPEC's share of crude imports increased by 38%, to 23 $10^3\text{m}^3/\text{d}$ in the second quarter 1986 versus the second quarter 1985, with the largest gains accruing to Middle East and West African suppliers. Non-OPEC supplies declined by 18%, to 22 $10^3\text{m}^3/\text{d}$. Imports from North Sea, after dramatic increases during 1985, decreased by 11 percentage points to a 34% share while Mexican imports dropped by half to an 8% overall share.

Shortly after deregulation (June 1, 1985), the U.S. government eliminated restrictions on exports of U.S. crude oil from the lower 48 states to Canada. As a result, Ontario refiners have been importing small volumes of U.S. crude, via the Interprovincial pipeline system, since mid-1985. In the second quarter 1986 Ontario imported about 3 $10^3\text{m}^3/\text{d}$ of U.S. light crude oil, representing about 7% of Canadian crude imports.

SOURCES OF CRUDE OIL IMPORTS



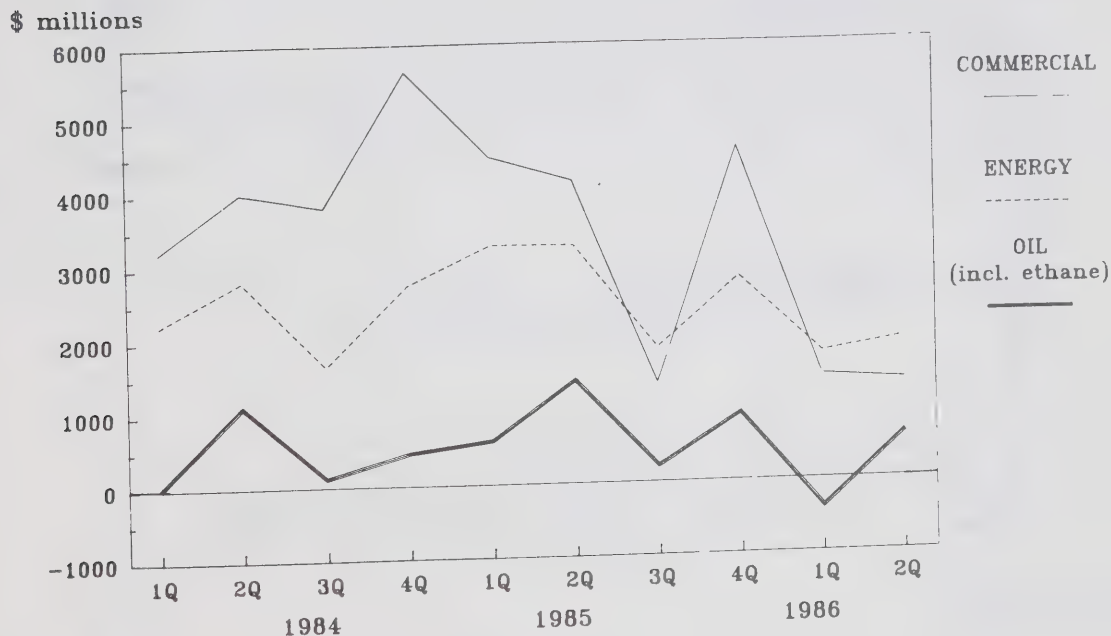
Source: National Energy Board

OIL TRADE BALANCE

After recording a \$395 million deficit over the first quarter, 1986 (the first in several years) oil trade (crude oil and oil products) showed a \$613 million surplus, and a volumetric surplus of about $75 \times 10^3 \text{ m}^3/\text{d}$, during the second quarter of 1986. This substantial improvement can be attributed to record level crude oil exports (the highest level in last 11 years) and the stabilization of crude oil prices. This surplus, however, is still only half of the second quarter 1985 level due largely to the 50% drop in crude prices.

Total energy trade registered a surplus of \$1.9 billion over the second quarter, up \$200 million from the previous quarter. However, it was down dramatically from the \$3.2 billion surplus recorded in the same period a year earlier. Canada, which is a net exporter of oil and all other energy commodities, has had its first half 1986 oil and energy trade surplus reduced considerably because of falling oil prices, and the negative impact this has had on the value of other energy exports.

OIL AND ENERGY TRADE BALANCE (QUARTERLY)



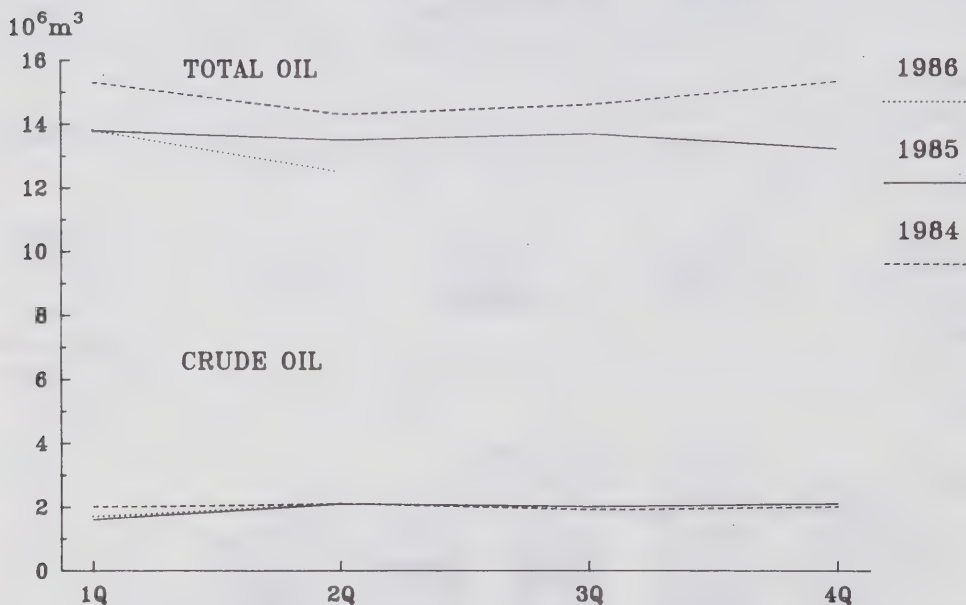
Source: Statistics Canada

INVENTORIES

At the end of June, crude oil inventories at refineries stood at $2,050 \text{ } 10^3 \text{ m}^3$, an decrease of 3% from June 1985. In contrast to the first quarter, refiners built crude stocks over the second quarter, at a rate of about $3.5 \text{ } 10^3 \text{ m}^3/\text{d}$.

Traditionally, companies draw down refined oil product inventories during the second quarter because of a decline in refinery utilization resulting from maintenance programs. The second quarter 1986 was no exception, however the drawdown, of $17 \text{ } 10^3 \text{ m}^3/\text{d}$, was much greater than in previous years. It appears that, in conjunction with the large number of maintenance programs this year, some refiners further reduced inventories to reduce the risk associated with falling oil prices. Total product stocks were about $12,500 \text{ } 10^3 \text{ m}^3$ at the end of June, 7% lower than last year, and 12% below 1984 levels.

CLOSING OIL INVENTORIES END OF QUARTER



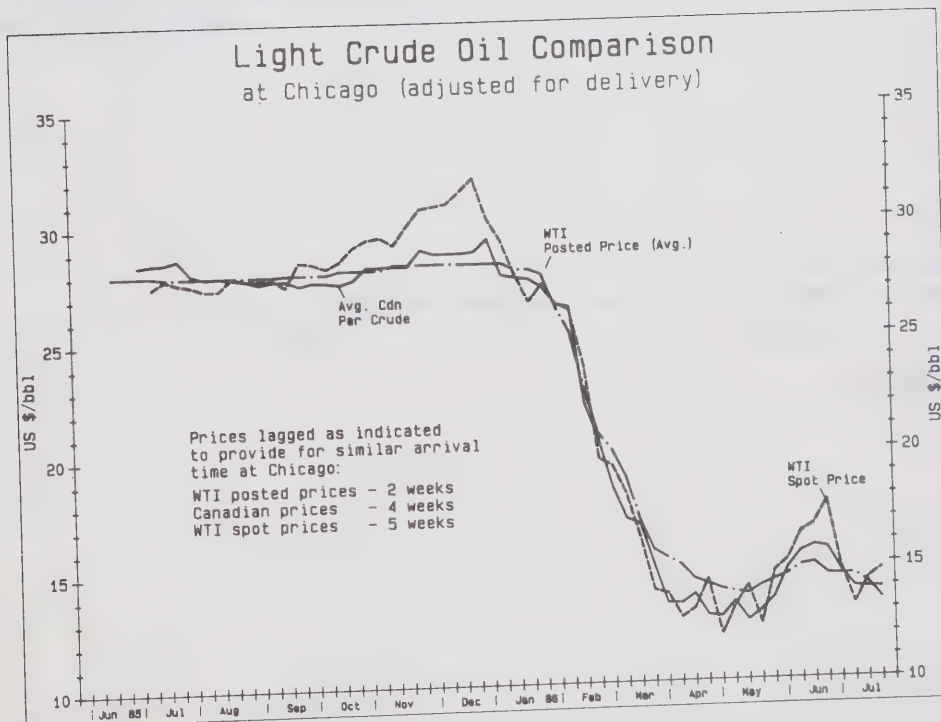
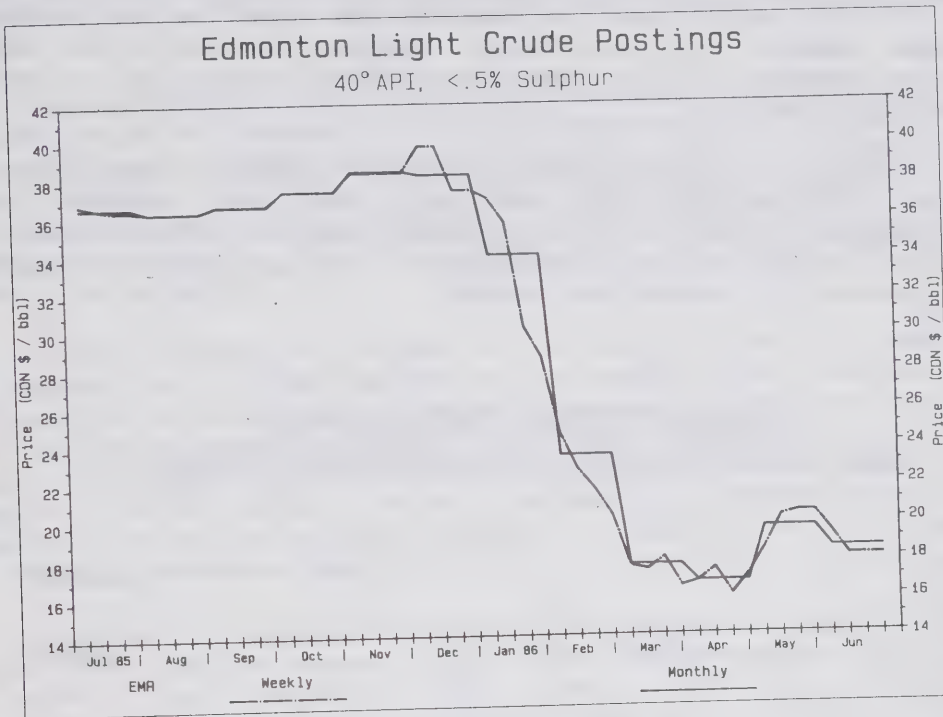
Source: Statistics Canada

PRICES

Crude Oil

Following the rapid crude oil price decline in the first quarter of 1986, Canadian as well as international prices remained volatile throughout the second quarter. The average Canadian par crude (40° API, less than 0.5% S) price at Edmonton, which traded at \$16.52 on April 1, strengthened during April and May to a high of \$20.38 on May 23 and then settled back to \$18.05 over the latter half of June.

Canadian crude oil prices continue to follow the trends in the international crude markets, primarily the U.S. benchmark crude West Texas Intermediate (WTI). After adjustments for delivery times, the correlation between posted and spot prices for WTI and Canadian par crude prices is evident.

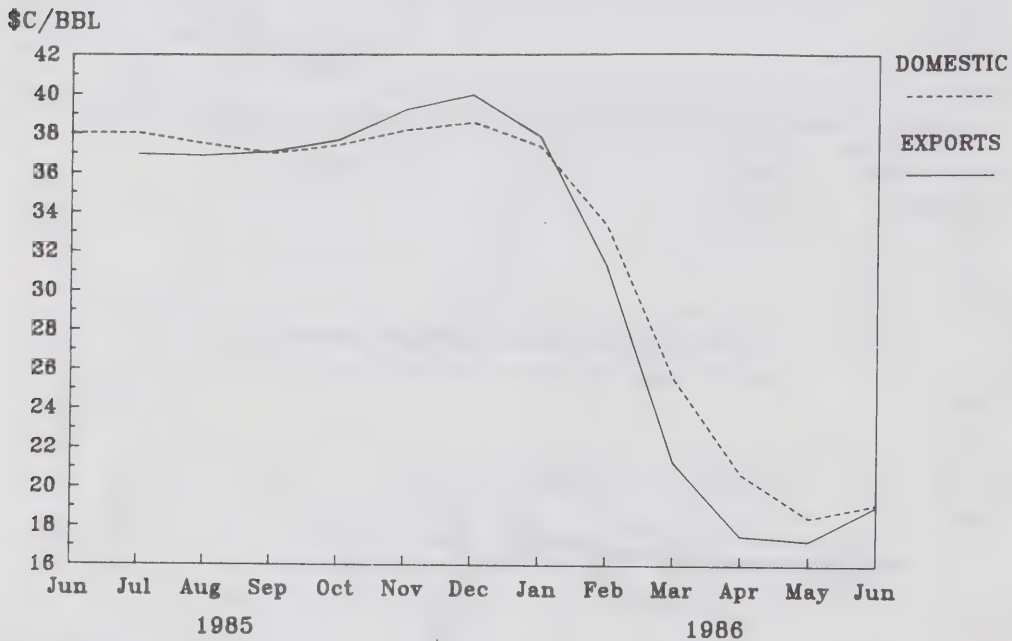


Crude Export Values

As illustrated on the following graph the difference between average light crude export values and Ontario average refiner acquisition cost, on a quality and transportation cost-adjusted basis, narrowed considerably during the second quarter 1986. In June the export and Ontario values were virtually identical. While it is difficult to quantify the impact of the difference in delivery times between U.S. and Ontario markets on the price difference between the two markets, it has been diminishing as the rate of decline in crude prices has slowed.

Uncertainty of Canadian supply (Canadian pipeline constraints), sales into relatively lower-priced West and Gulf Coast U.S. markets, including Alberta supplementary crude oil sales at below Canadian posted prices, and the very competitive nature of the Chicago market, all contribute to discounts in U.S. sales, compared to Canadian deliveries.

CANADIAN LIGHT CRUDE EXPORT AND ONTARIO DOMESTIC ACQUISITION VALUES



Source: Energy, Mines & Resources
National Energy Board

Product Prices

Retail prices for petroleum products continued to decline in the second quarter, reflecting crude oil price decreases in the first quarter. During the second quarter, average retail gasoline prices dropped by 8.5 cents/litre for a decline of more than 10.0 cents/l since January (see Appendix 1).

Fluctuations in crude oil prices, however, do not necessarily result in oil product price changes of the same magnitude. In the short term, local market conditions are more important than crude costs in determining product prices. Differences in rates of price change among products, regions and classes of trade are also attributed, in the short term, to local market conditions. Ultimately, it is the marketplace and competition which dictate oil product price levels.

Average automotive diesel prices declined by 4.1 cents/l in the second quarter, for a total decline of 4.5 cents/l since January. The slower rate of decline in retail diesel prices, compared to gasoline, partly reflects a more competitive gasoline market. The retail segment of the diesel market represents less than 10% of total diesel sales, while more than 80% of gasoline is sold at retail. From a volumetric standpoint, gasoline is the most important petroleum product marketed in Canada, accounting for about 40% of all petroleum products sold.

A number of provinces reduced their taxes on gasoline and diesel, marginally lowering the average price. The federal sales tax, however, rose by 0.4 cents/l (see Appendix 2). The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in the Industrial Product Price Index, with a one-quarter lag. For example, changes to the Index in the fourth quarter of 1985 were reflected in the tax levels effective April 1, 1986.

Appendix 1

AVERAGE RETAIL PRICES,
REGULAR LEADED GASOLINE, 1985-1986

	1985 September	1985 December	1986 March	1986 June	Change Last 12 Months
	(Canadian cents per litre)				%
St. John's (Nfld.)	59.8	61.8	61.5	51.6	-11.0
Charlottetown	57.9	58.5	57.8	48.0	-14.3
Halifax	57.7	58.1	56.7	46.8	-14.6
Saint John (N.B.)	55.9	59.8	60.4	50.2	+ 2.0
Montreal	57.7	58.2	57.8	47.2	-15.9
Ottawa	51.1	52.2	51.5	44.9	-10.2
Toronto	48.9	50.7	48.4	40.3	-12.6
Winnipeg	52.9	54.2	51.6	45.6	-11.3
Regina	43.6	44.3	41.6	37.7	-16.6
Calgary	45.9	46.6	44.0	36.6	-17.6
Vancouver	55.6	55.5	52.8	42.7	-20.3
Canadian average	51.8	52.7	50.5	42.0	-15.7
Consumption taxes included:					
- Federal	6.7	6.8	7.1	7.5	59.6
- Provincial	7.6	7.6	7.6	7.5	0.0

Appendix 2

CONSUMPTION TAXES ON PETROLEUM PRODUCTS,
June 1, 1986

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(per cent)		(cents per litre)			
<u>Federal Taxes</u>						
Sales *			3.98	4.36	4.48	3.66
Excise			3.5	3.5	3.5	2.0
<u>Taxes provinciales</u>						
Newfoundland*	22	26	9.9	9.9	9.9	13.3
Prince Edward Island*	20	23	8.7	8.7	8.7	10.9
Nova Scotia*	20	21	8.3	8.3	8.3	9.0
New Brunswick*	20	23	9.7	10.2	10.4	10.0
Quebec (a)		-	13.65	14.4	14.7	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba	-	-	8.9	8.0	8.0	9.2
Saskatchewan	-	-	-	-	-	-
Alberta	-	-	-	-	-	-
British Columbia*	20(b)	20(b)	8.56	8.56	8.56	9.00
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	15	(c)	8.4	8.4	8.4	7.1

(a) Reduced by one third within 5 km of the provincial border.

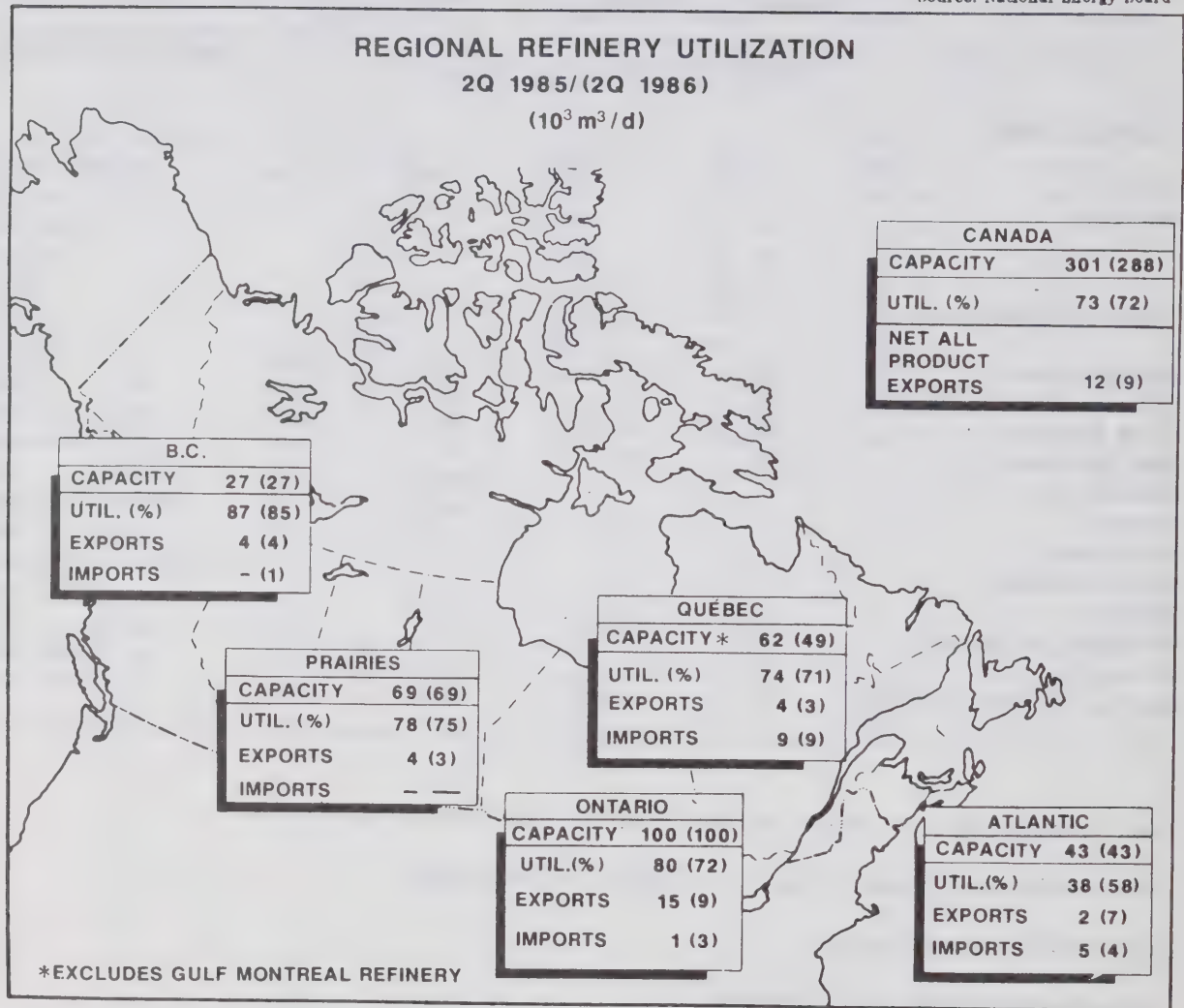
(b) Additional transit tax of 0.95¢/l in Vancouver.

(c) 85% of gasoline tax.

* Changed from last quarter

Appendix 3

Source: National Energy Board



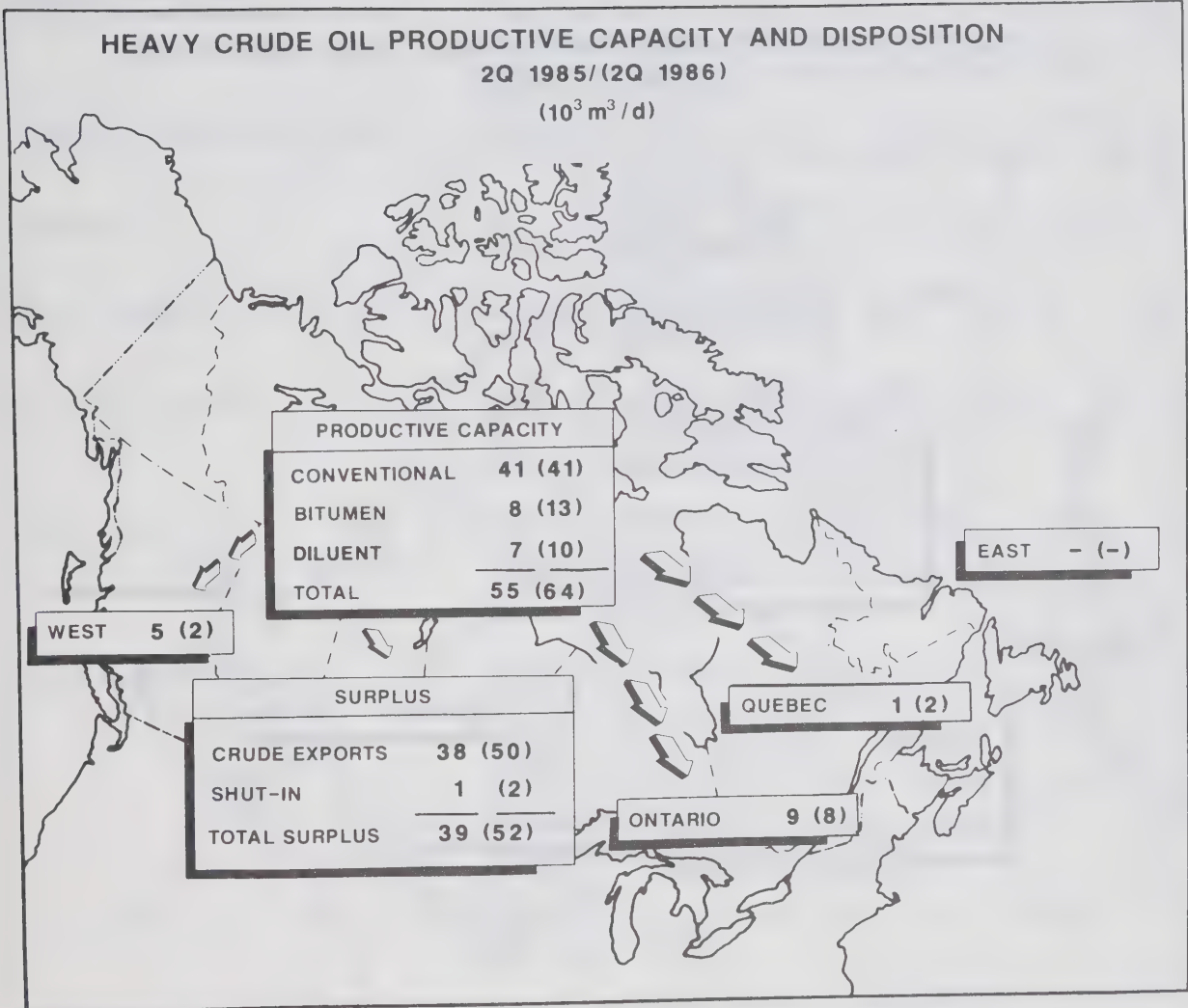
Appendix 4

Source: National Energy Board

HEAVY CRUDE OIL PRODUCTIVE CAPACITY AND DISPOSITION

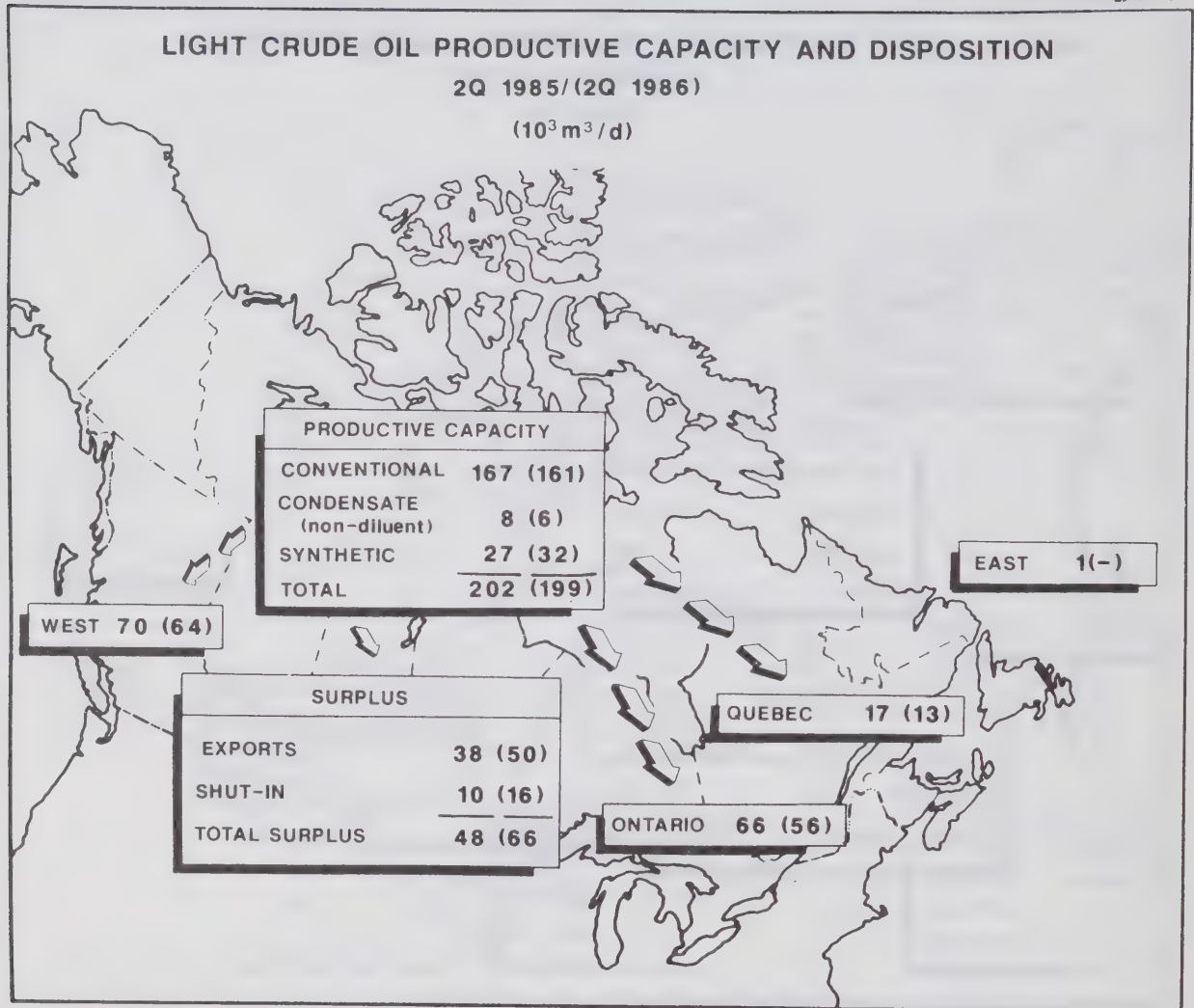
2Q 1985/(2Q 1986)

(10³ m³/d)



Appendix 5

Source: National Energy Board



Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.
Shut-in capacity	The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.
Synthetic crude oil	Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.



Energy, Mines and
Resources Canada

Energie, Mines et
Ressources Canada

Hon. Marcel Masse,
Minister

L'Hon. Marcel Masse,
Ministre

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The Canadian Oil Market

Vol. II, No. 3 Third Quarter 1986



Canada

THE CANADIAN OIL MARKET

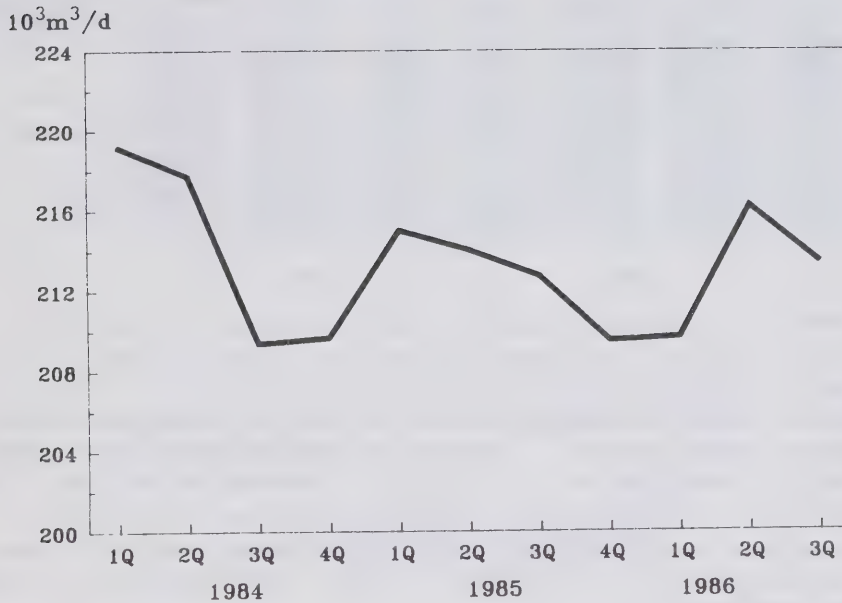
Vol. II, No. 3, Third Quarter 1986

THE CANADIAN OIL MARKET

DOMESTIC DEMAND

Petroleum product consumption (seasonally adjusted) dropped off 1% from a strong second-quarter level, but was marginally higher than the 1985 annual average.

TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



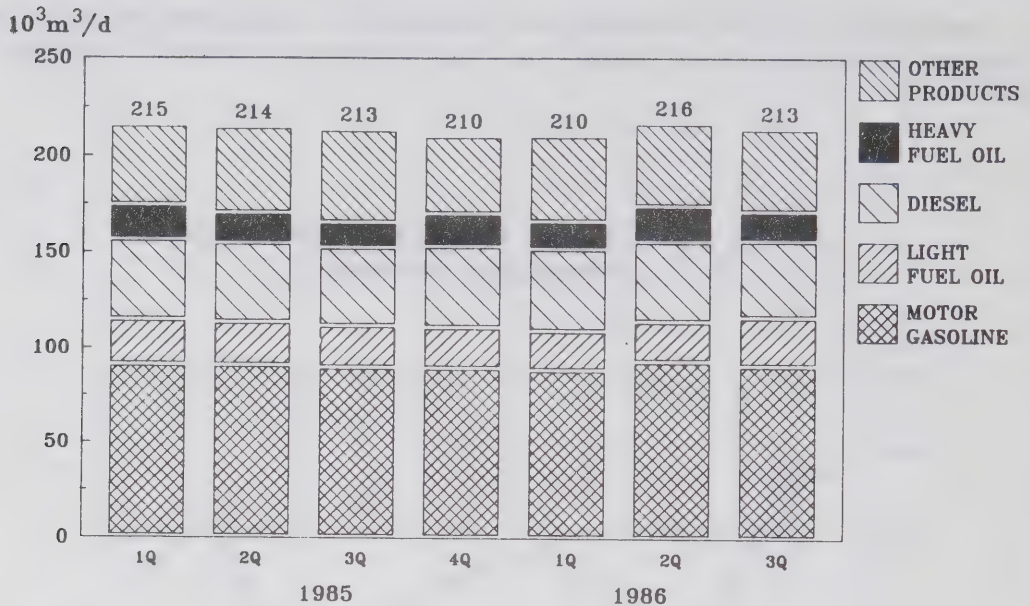
Source: Statistic Canada

The relatively wide swings in demand for individual products appear to be directly related to inventory adjustments associated with the rapid price movements during the year (see graph on the following page). In anticipation that falling crude oil prices would be reflected in heavy fuel oil prices, demand for heavy fuel oil in the first quarter fell off sharply (16%) from its 1985 level. During the second quarter, the sharp rise in demand (29%) reflected restocking by end-consumers. Third-quarter, seasonally adjusted demand returned to a normal level of 15 10³m³/d, slightly below the 1985 average.

Motor gasoline demand showed a similar pattern to heavy fuel oil but the swings were less dramatic. Third-quarter demand at 90.3 10³m³/d was slightly above (0.7%) the 1985 level.

Light fuel oil demand in the third quarter jumped sharply (over 20%) from both the previous quarter (up 14%) and the average 1985 level, reflecting, in part, a building of inventories by final consumers in anticipation of higher prices before the heating season. Diesel fuel demand continued to decline in the third quarter, down 4.3% from 1985.

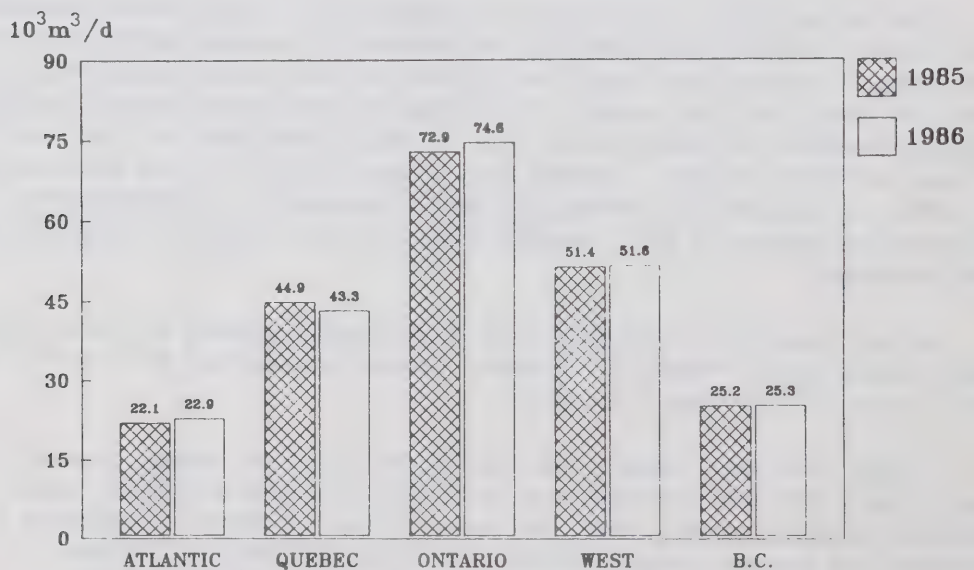
PETROLEUM PRODUCT CONSUMPTION BY PRODUCT (Seasonally Adjusted)



Source: Statistics Canada

On a regional basis, only Quebec had a drop in demand (down 3.6%) from the same period a year earlier. Demand in the Atlantic provinces was up the sharpest (3.6%) followed by Ontario (2.3%). Demand in the Prairies remained unchanged while in British Columbia demand rose marginally (0.4%). Ontario was the only region to have exhibited continued year-over-year gains in demand in all three quarters, reflecting in part the continued strength of the economy of that region.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Third Quarter)



* Includes Yukon And N.W.T.

Source: Statistics Canada

REFINERY UTILIZATION

During the third quarter Canadian refinery utilization rates rose 13 percentage points, to 85%, from the second quarter of 1986*. Refinery utilization followed the traditional pattern of higher rates in the first and third quarters, with lower rates during the second quarter, when throughputs are normally reduced for maintenance turnarounds.

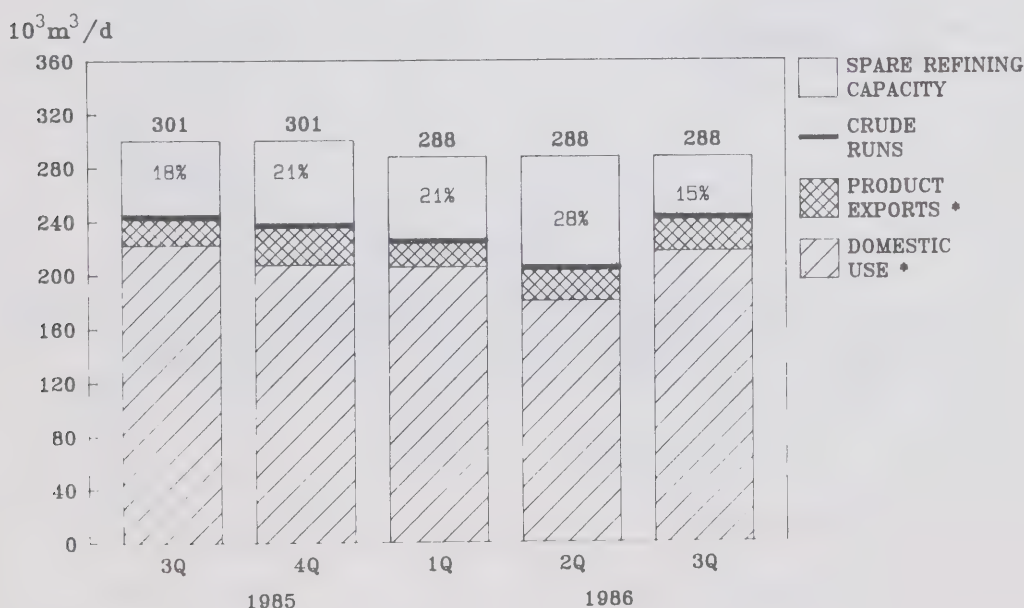
Although crude oil and equivalent runs, which include other feedstocks, rose marginally, to $247 \text{ } 10^3 \text{ m}^3/\text{d}$, from the previous year (but were substantially higher than in the second quarter 1986), the average utilization rate was 3 percentage points greater, reflecting a $13 \text{ } 10^3 \text{ m}^3/\text{d}$ drop in capacity, because of the Montreal Gulf refinery closure in January 1986. The slight rise ($3 \text{ } 10^3 \text{ m}^3/\text{d}$) in runs reflects a small increase in consumption and an inventory build, offset somewhat by a decline in the net product export position.

The Atlantic region, although experiencing the lowest regional utilization rate (74%), portrayed the greatest improvement from the year earlier (up 16 percentage points) as a crude oil processing agreement, whereby crude oil imports are re-exported as refined oil products, which began in the early fall of 1985, contributed significantly to improved refinery utilization in 1986.

Utilization rates in other regions were basically unchanged from the third quarter 1985, except in Quebec where it increased five percentage points, to 88%. In the Prairies and B.C. third quarter rates remained basically unchanged at 92%. Appendix 3 illustrates third quarter 1985 and 1986 regional refinery utilization.

REFINERY UTILIZATION

(* adjusted for refinery gain)



Source: Statistics Canada

* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

CRUDE OIL REQUIREMENTS

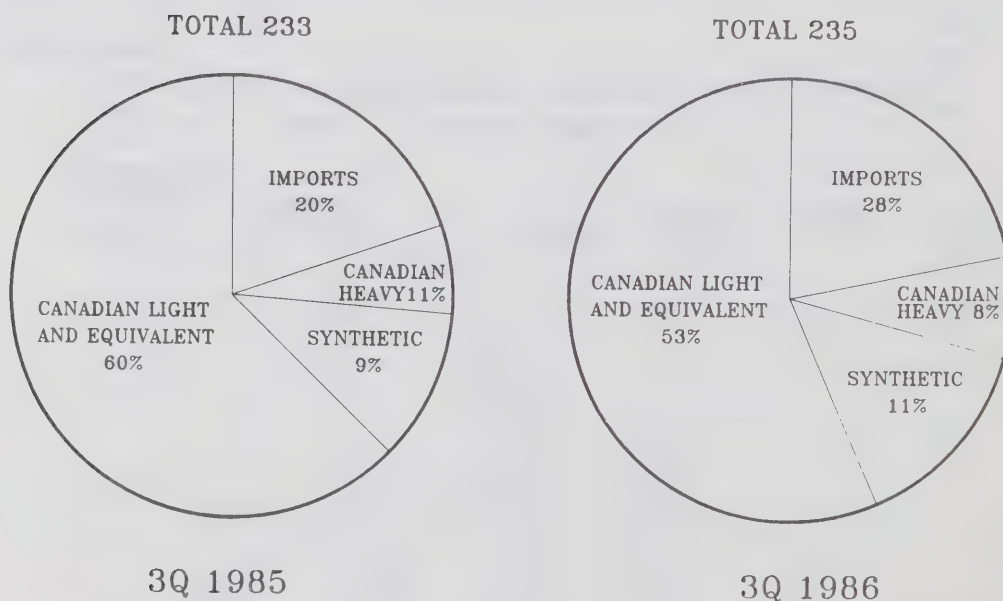
Total crude oil receipts at Canadian refineries increased marginally (1%) to 235 $10^3\text{m}^3/\text{d}$ reflecting a slight increase in consumption and a greater crude and product inventory build (8 $10^3\text{m}^3/\text{d}$), with an offsetting loss in net oil product exports of nearly 4 $10^3\text{m}^3/\text{d}$, this year versus last. Over the quarter the build in petroleum stocks averaged 10 $10^3\text{m}^3/\text{d}$ compared to 2 $10^3\text{m}^3/\text{d}$ in the previous year. Although product exports rose by 17%, to 25 $10^3\text{m}^3/\text{d}$, product imports increased by 73% to 18 $10^3\text{m}^3/\text{d}$ generally reflecting the competitive nature of foreign petroleum product markets.

As a result of deregulation in June of 1985 and the removal of regulatory incentives (Atlantic Transfer Subsidy Program) to utilize domestic crude in eastern Canada, and the subsequent introduction of a crude import/product export agreement, imported crude receipts rose to 65 $10^3\text{m}^3/\text{d}$, the highest level since the third quarter of 1981. This volume represented a 28% share of total refinery receipts, 8 percentage points higher than the same period a year earlier.

Receipts of domestic light crude and equivalent (including synthetic crude), which had a relative price advantage to both domestic heavy and imported crudes during the period of regulation, declined 6% by volume, to 151 $10^3\text{m}^3/\text{d}$, from the previous year, to account for 64% of total domestic feedstock requirements. Domestic heavy crude receipts also declined on relatively small volumes (19 $10^3\text{m}^3/\text{d}$) to an 8% share of total crude use, reflecting domestic refiners' limited capacity to process heavy crudes.

CRUDE OIL RECEIVED AT CANADIAN REFINERIES

($10^3\text{m}^3/\text{d}$)



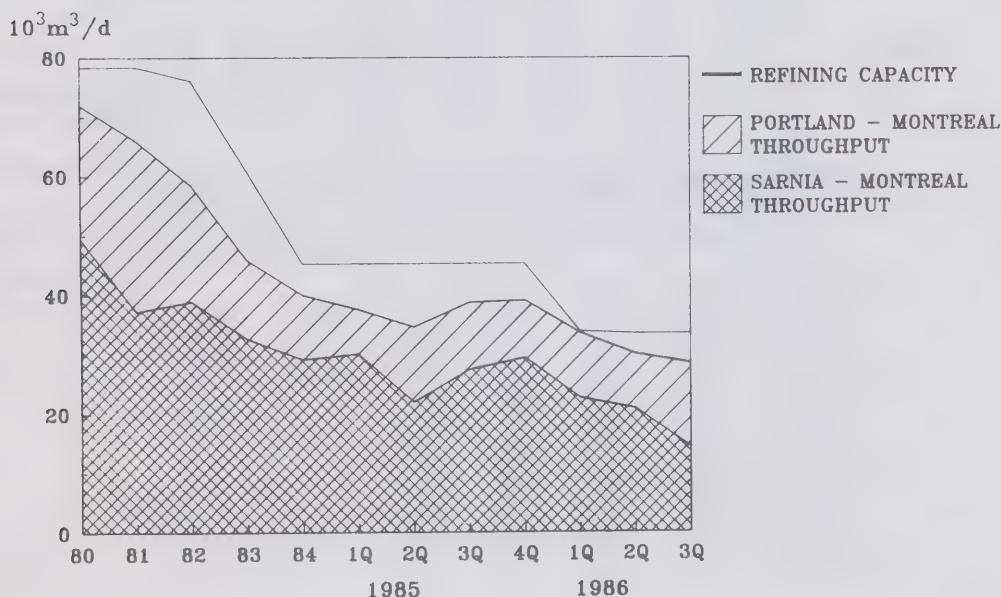
MONTREAL CRUDE USE

Throughput on the Sarnia-Montreal portion of the Interprovincial Pipeline fell to about $14 \times 10^3 \text{ m}^3/\text{d}$ during the third quarter of 1986, the lowest quarterly throughput level since the pipeline began operations in 1976.

While this decline, in part, reflected the trend of falling product demand in Quebec, the Gulf refinery closure and a decline in the net product export position, much of the drop, in comparison to the first half of the year, resulted from pipeline bottlenecks in western Canada and economic incentives to purchase light offshore crude oil which existed in the summer. Apportionment of pipeline space (demand exceeded available pipeline space) occurred early in the quarter, forcing some Montreal refiners to divert crude destined for Montreal to the Ontario market.

At the same time deliveries on the Portland pipeline rose, due to attractive light crude oil prices offshore vis-a-vis Canadian crude prices, as well as the need to replace displaced domestic crude. As a result Portland pipeline deliveries reached $14 \times 10^3 \text{ m}^3/\text{d}$, the highest level reported in several years, and up $4 \times 10^3 \text{ m}^3/\text{d}$ from average first half 1986 deliveries. Total Montreal crude oil receipts were just below $29 \times 10^3 \text{ m}^3/\text{d}$, a drop of almost $11 \times 10^3 \text{ m}^3/\text{d}$ from the third quarter 1985, but only about $3 \times 10^3 \text{ m}^3/\text{d}$ below first half 1986 receipts.

MONTREAL REFINING CAPACITY AND PIPELINE THROUGHPUT



Source: Energy, Mines & Resources

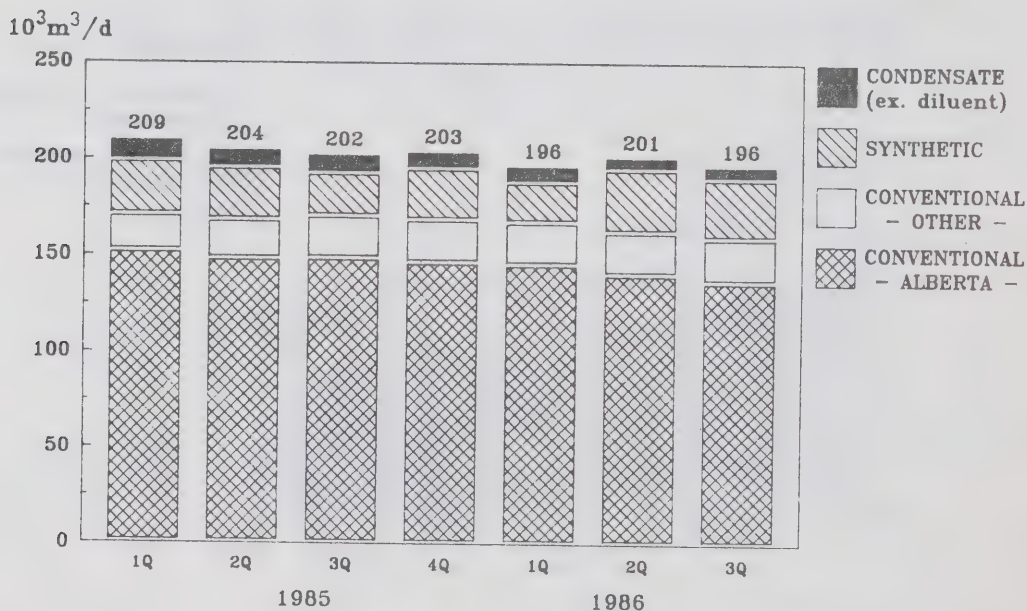
PRODUCIBILITY

Total productive capacity of crude oil and equivalent rose by 3.6%, or $9 \times 10^3 \text{ m}^3/\text{d}$, to $266 \times 10^3 \text{ m}^3/\text{d}$ during the third quarter 1986 on a year-over-year basis. Continued growth in heavy crude supply (including diluent) and steady production at the synthetic plant operations accounted for the increase, despite a drop in light crude capacity.

Alberta conventional light and medium crude oil productive capacity fell from the third quarter 1985 to the third quarter 1986 by $12 \times 10^3 \text{ m}^3/\text{d}$ (8%), to $136 \times 10^3 \text{ m}^3/\text{d}$, reflecting the natural decline in existing reservoirs and a lack of new discoveries. It is estimated that lower crude oil prices contributed about 1 to $2 \times 10^3 \text{ m}^3/\text{d}$ of the decline in Alberta productive capacity. Light and medium producibility in rest of Western Canada increased marginally, by $1 \times 10^3 \text{ m}^3/\text{d}$ to $23 \times 10^3 \text{ m}^3/\text{d}$. About 50% of the light crude supply from other regions originates in Saskatchewan.

Synthetic output over the third quarter was around $31 \times 10^3 \text{ m}^3/\text{d}$, an increase of 38% ($9 \times 10^3 \text{ m}^3/\text{d}$) from the 1985 level, as both Suncor and Syncrude plants cut production in 1985 due to maintenance programs. (A fire at Suncor in late August, which was less damaging than originally thought, reduced third quarter output marginally.) Both synthetic plants operated at well above annualized operating capacities during the second and third quarters of 1986.

LIGHT CRUDE OIL AND EQUIVALENT PRODUCIBILITY

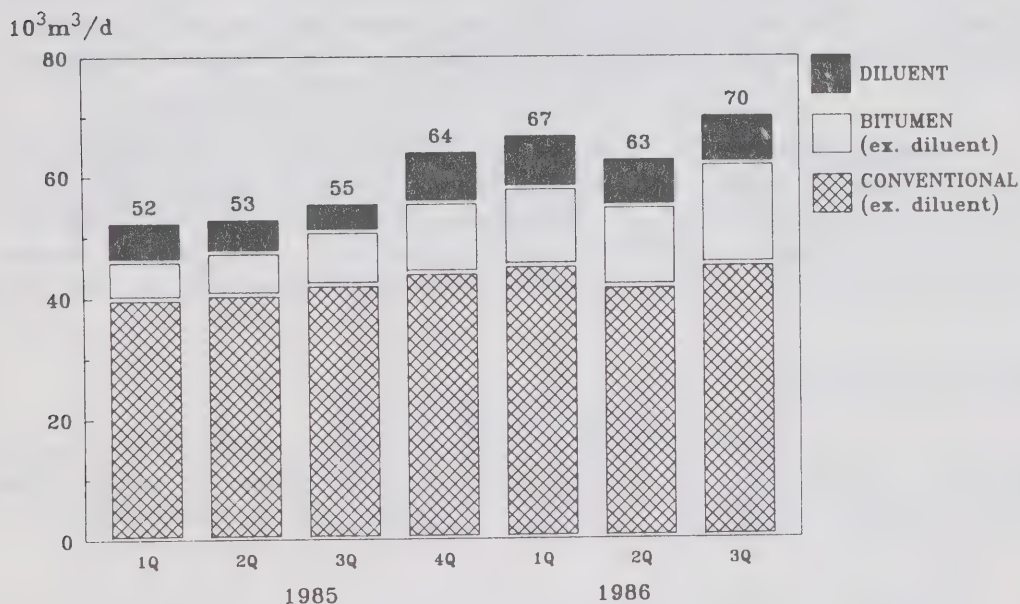


Source: National Energy Board

Total condensate production averaged around $17 \times 10^3 \text{ m}^3/\text{d}$, a marginal increase on a year-over-year basis. Diluent requirements rose by almost 60%, from 5 to $8 \times 10^3 \text{ m}^3/\text{d}$, reflecting higher bitumen output. As a result condensate available for use as refinery feedstock or other purposes declined by over $3 \times 10^3 \text{ m}^3/\text{d}$.

Heavy crude oil productive capacity (including diluent) during the third quarter 1986, averaged $70 \times 10^3 \text{ m}^3/\text{d}$, up $15 \times 10^3 \text{ m}^3/\text{d}$. As in the case of light crude, it is estimated that about $1\text{--}2 \times 10^3 \text{ m}^3/\text{d}$ of heavy crude capacity was lost due to low oil prices. Nevertheless raw bitumen capacity rose by $8 \times 10^3 \text{ m}^3/\text{d}$, to $17 \times 10^3 \text{ m}^3/\text{d}$ from the third quarter 1985, as much of this additional capacity was under development prior to the crude price decline. Conventional heavy crude supply rose marginally.

HEAVY CRUDE OIL PRODUCIBILITY



Source: National Energy Board

PRODUCTION AND SHUT-IN

As a result of relatively high synthetic crude production, and continued growth in heavy crude output, total oil production jumped $14 \times 10^3 \text{ m}^3/\text{d}$, to over $257 \times 10^3 \text{ m}^3/\text{d}$, in the third quarter 1986, compared to the third quarter of 1985. This was one of the highest quarterly production levels since the early 1980s.

Light crude and equivalent production was up $3 \times 10^3 \text{ m}^3/\text{d}$, to $191 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter from a year ago, as exports to the U.S. market rose and synthetic output was higher.

Despite the fact that conventional light crude oil production fell slightly, to $153 \times 10^3 \text{ m}^3/\text{d}$ (higher synthetic output contributed to the total light crude production increase), shut-in of light crude dropped by $8 \times 10^3 \text{ m}^3/\text{d}$, to $5 \times 10^3 \text{ m}^3/\text{d}$, reflecting the drop in producibility.

The Interprovincial Pipeline operated at capacity throughout the summer months. However, there was excess capacity on both the Trans Mountain and Rangeland systems. As a result, supplementary sales of Alberta light crude oil to the export market via these pipeline systems averaged about $5 \times 10^3 \text{ m}^3/\text{d}$.

Heavy crude production continued to grow, primarily due to additional production from bitumen projects. Despite almost $4 \times 10^3 \text{ m}^3/\text{d}$ of shut-in capacity, production increased more than $10 \times 10^3 \text{ m}^3/\text{d}$, to $66 \times 10^3 \text{ m}^3/\text{d}$. Much of the incremental production was exported. The maps in appendices 5 and 6 illustrate domestic crude oil capacity and disposition in the third quarter of 1985 and 1986.

EXPORTS AND IMPORTS

As a result of a decline in light crude exports, total crude oil exports fell to $94 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter, down from $100 \times 10^3 \text{ m}^3/\text{d}$ during the April to June 1986 period. However on a year-over-year basis, exports were up $25 \times 10^3 \text{ m}^3/\text{d}$, as both light and heavy crude exports rose.

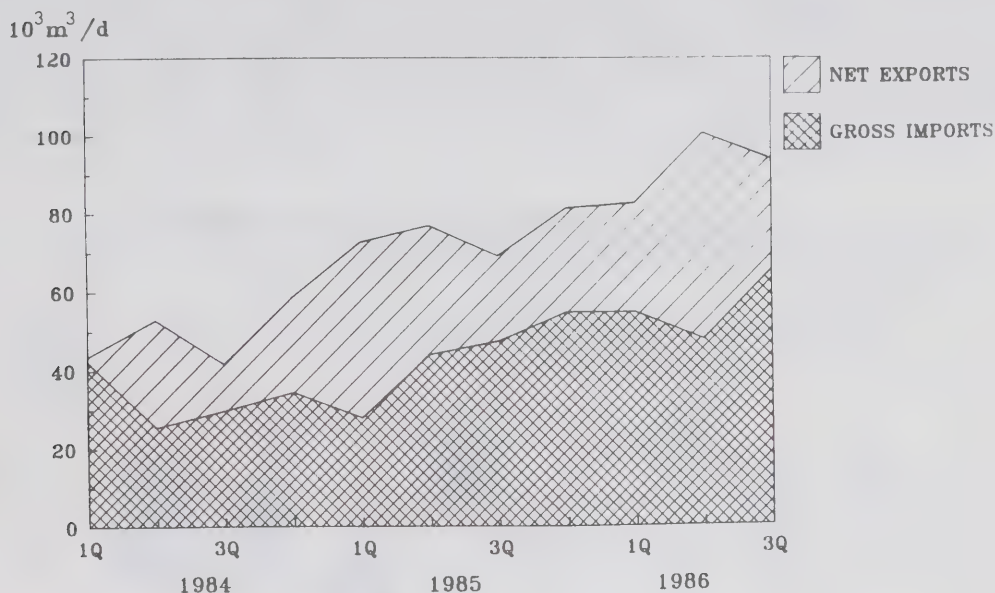
Despite the fact that light crude oil production rose in the third quarter versus the second quarter, light crude oil and equivalent exports fell as U.S. refiner demand dropped off and demand by Canadian refiners rose substantially, reflecting an inventory build in Canada.

However, light crude exports, at $42 \times 10^3 \text{ m}^3/\text{d}$, were about $9 \times 10^3 \text{ m}^3/\text{d}$ greater than in third quarter 1985. Much of this difference was reflected in marketing problems in the export market, associated with deregulation during third quarter 1985. As previously mentioned, the development of the Alberta secondary sales system which was used to market crude which might have otherwise been shut-in, also contributed to the rise in exports.

With heavy crude production still on the rise and Canadian demand rising marginally, all incremental production was exported. Third quarter exports, virtually all to the U.S. market, were $52 \times 10^3 \text{ m}^3/\text{d}$, up from $36 \times 10^3 \text{ m}^3/\text{d}$ a year ago.

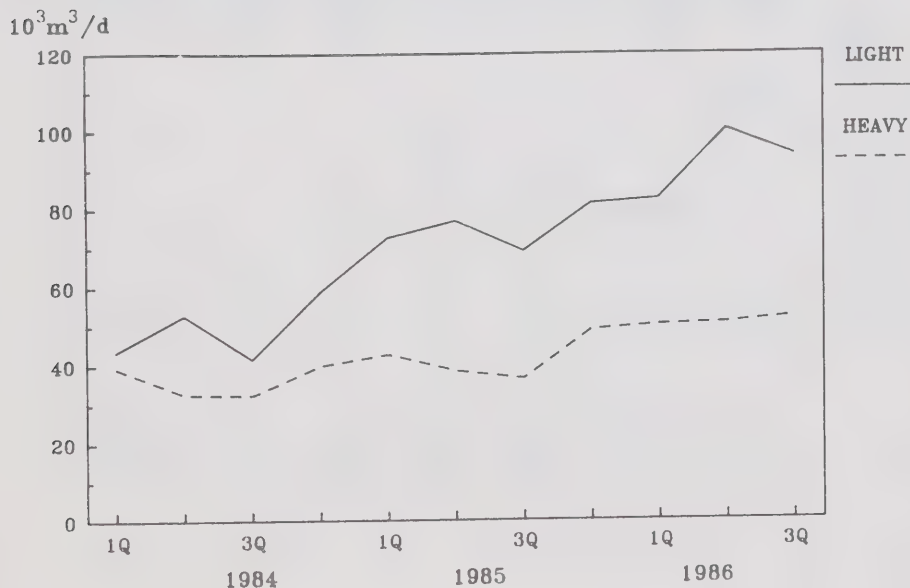
In response to attractive offshore prices, a product inventory build and domestic pipeline constraints, crude oil imports rose substantially, on both a year-over-year and quarter-over-quarter basis, to $65 \times 10^3 \text{ m}^3/\text{d}$. Imports were up $18 \times 10^3 \text{ m}^3/\text{d}$ from the third quarter 1985, as domestic receipts declined (see Crude Oil Requirements).

CRUDE OIL EXPORTS - IMPORTS



Source: Statistics Canada

CRUDE OIL EXPORTS

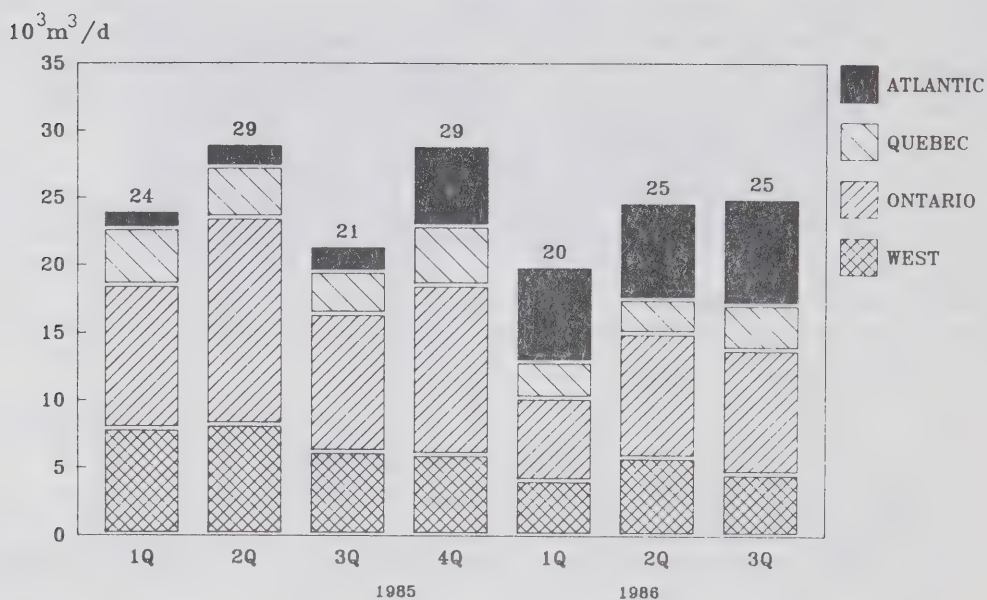


Source: National Energy Board

As a result of the jump in crude imports, Canada's oil import dependence* expressed as a percentage of domestic oil consumption, rose to 27%, versus 21% in first half 1986, and 17% in third quarter 1985.

Canadian-U.S. oil product price differentials continued to affect refined oil product flows. Total oil product imports averaged $18 \times 10^3 \text{ m}^3/\text{d}$, up $8 \times 10^3 \text{ m}^3/\text{d}$ from the same period in 1985, resulting in a decline in the net product export position, despite a rise in product exports. On a regional basis product exports from Quebec, Ontario and the West were down 12% reflecting Canadian refiners difficulty in competing in volatile U.S. product markets. In contrast, exports from the Atlantic region more than quadrupled to almost $8 \times 10^3 \text{ m}^3/\text{d}$ reflecting the processing of additional crude volumes for re-export as product.

REGIONAL PETROLEUM PRODUCT EXPORTS



Source: Statistics Canada

* Crude oil imports less net refined oil product exports

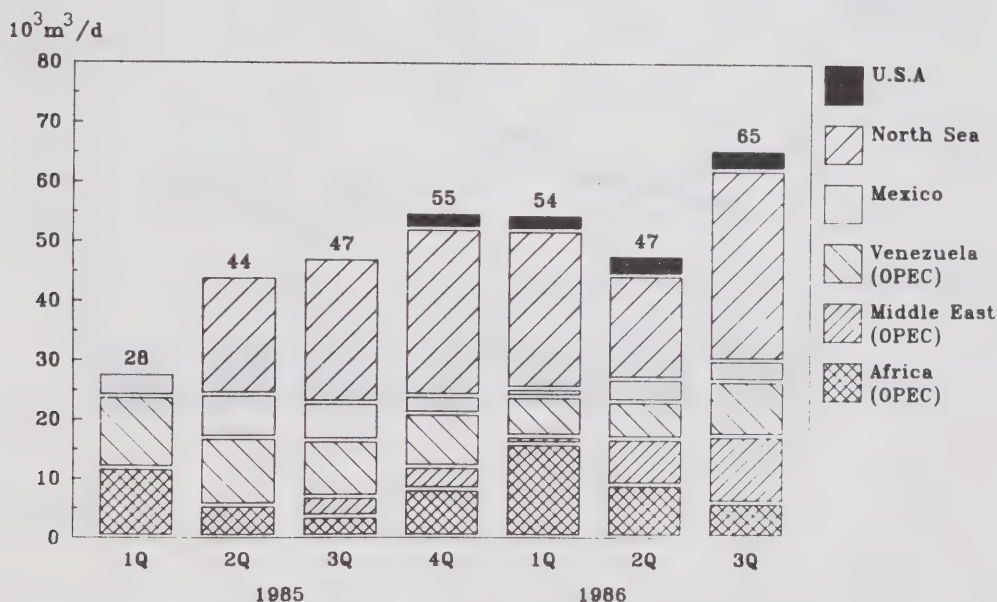
SOURCES OF CRUDE OIL IMPORTS

Imports of crude oil during the third quarter 1986 jumped to $65 \times 10^3 \text{ m}^3/\text{d}$, up sharply from both last year ($47 \times 10^3 \text{ m}^3/\text{d}$) and the first half 1986 ($51 \times 10^3 \text{ m}^3/\text{d}$). Much of this increase took place in the Atlantic region (around 60%) reflecting the import/export agreement and an inventory build to take advantage of low crude oil prices. Imports into Quebec also rose, to $27 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter, reflecting a substantial offshore crude price advantage in comparison to Canadian light crude oil, pipeline capacity constraints on the Interprovincial systems and a greater-than-normal third quarter inventory build. Ontario imports, which have remained constant at around $3 \times 10^3 \text{ m}^3/\text{d}$ since the fourth quarter of 1985, accounted for 5% of imports.

Imports from non-OPEC countries averaged around $39 \times 10^3 \text{ m}^3/\text{d}$ (up $8 \times 10^3 \text{ m}^3/\text{d}$) or 60% of all crude imports. North Sea crude remained the principal source at $32 \times 10^3 \text{ m}^3/\text{d}$ (or a 49% market share), an increase of $8 \times 10^3 \text{ m}^3/\text{d}$ from last year, and $10 \times 10^3 \text{ m}^3/\text{d}$ above first half 1986 levels. Mexican crude imports, which have declined since 1985, dropped to the same market share as the U.S., at 5%.

OPEC's exports to Canada on a year-over-year basis rose $10^3 \text{ m}^3/\text{d}$, to $26 \times 10^3 \text{ m}^3/\text{d}$. Saudi Arabia registered the largest gain with exports to Canada of $4 \times 10^3 \text{ m}^3/\text{d}$, or 6% of the Canadian market share, in comparison to zero last year. Imports from OPEC countries were also up about $3 \times 10^3 \text{ m}^3/\text{d}$ from the first half of the year.

SOURCES OF CRUDE OIL IMPORTS



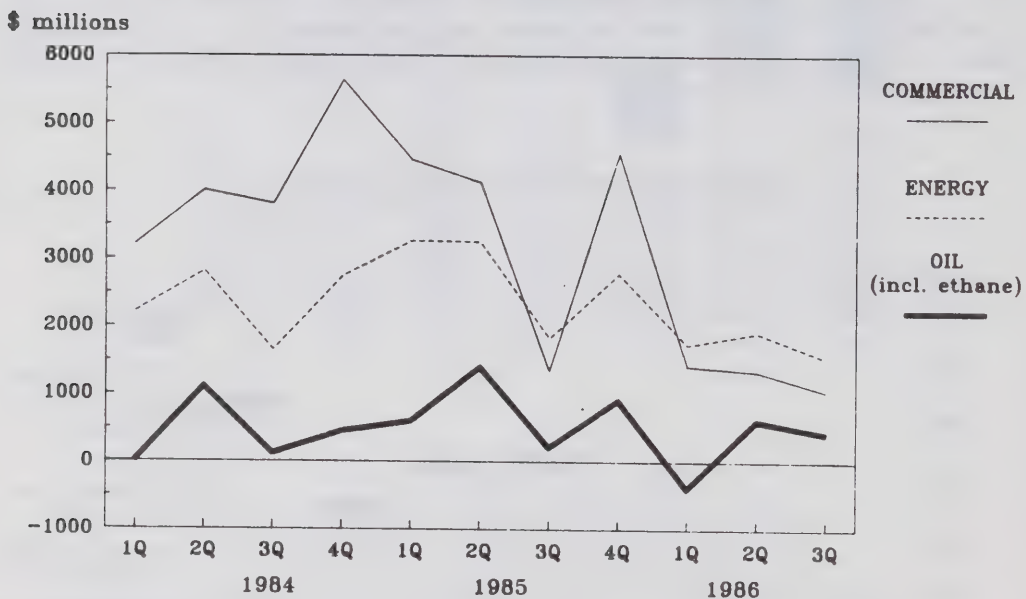
SOURCE : NATIONAL ENERGY BOARD

OIL TRADE BALANCE

During the third quarter of 1986, Canada had an oil trade surplus (crude oil, oil products and natural gas liquids) of \$420 million and a volumetric surplus of $24 \times 10^3 \text{ m}^3/\text{d}$. This represents a substantial reduction of almost \$195 million, and $52 \times 10^3 \text{ m}^3/\text{d}$ from the previous quarter. (It should be noted that oil trade generally follows a seasonal cycle whereby the smallest surplus occurs in the third quarter when export demand for crude oil and natural gas liquids falls). On a year-over-year basis the oil surplus improved by about \$210 million, reflecting the increase in both light crude and heavy crude exports, which more than offset the decline in oil prices.

The energy trade surplus declined \$380 million, to \$1.5 billion in the third quarter, from the second quarter 1986. As well the surplus fell from the previous year, but the decline was much less severe than in the first half of 1986. However in the first nine months of 1986 the energy trade surplus was only \$5.2 billion, a drop of more than 35% (\$3.1 billion) from the same period in 1985.

OIL AND ENERGY TRADE BALANCE (QUARTERLY)



Source: Statistics Canada

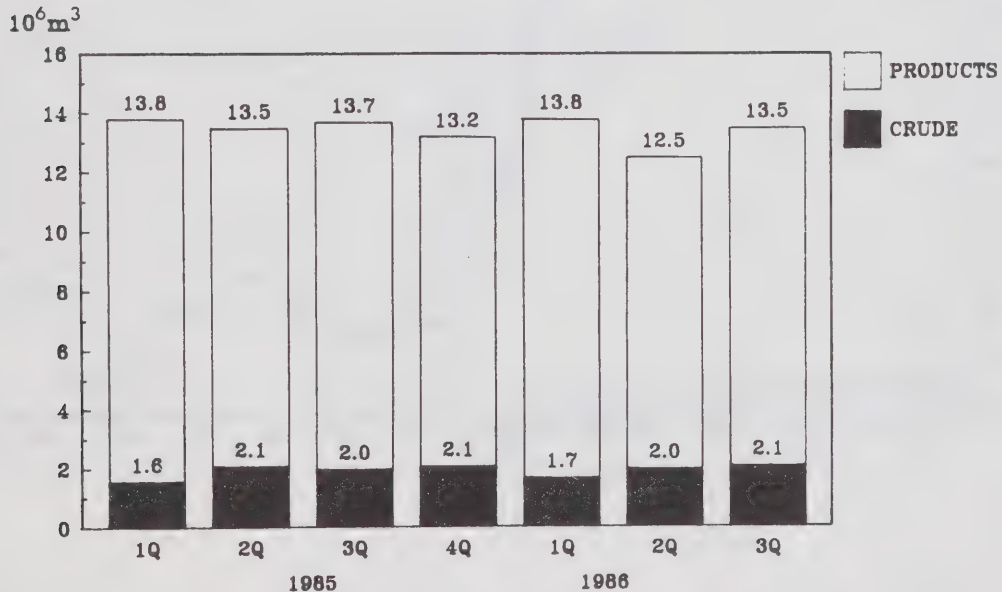
INVENTORIES

The crude stock position at the end of September 1986, which stood at $2,065 \times 10^3 \text{ m}^3$, was up marginally from both end - June 1986 and the end - September, 1985 positions. Although refiners generally draw down stocks in July and August there usually is a significant crude oil build in September. During the month of September 1986 refiners added to crude stocks at the rate of $10 \times 10^3 \text{ m}^3/\text{d}$.

At the end of September total product stocks were about 11,450 10^3 m^3 , a drop of 2% from September 1985 levels. Following the trend of the last few years absolute stock levels continued to decline as refiners rationalize inventories to reflect reduced sales.

In the expectation that crude and product prices were bottoming out in the third quarter, and as a result of the low stock position entering the third quarter of 1986, refiners built product stocks by $10 \times 10^3 \text{ m}^3/\text{d}$ during the third quarter. This was a much greater build than the $3 \times 10^3 \text{ m}^3/\text{d}$ which occurred in the third quarter 1985. Lower product consumption and a deterioration in the net product export position also contributed to the sizable build, compared to 1985.

CLOSING OIL INVENTORIES END OF QUARTER

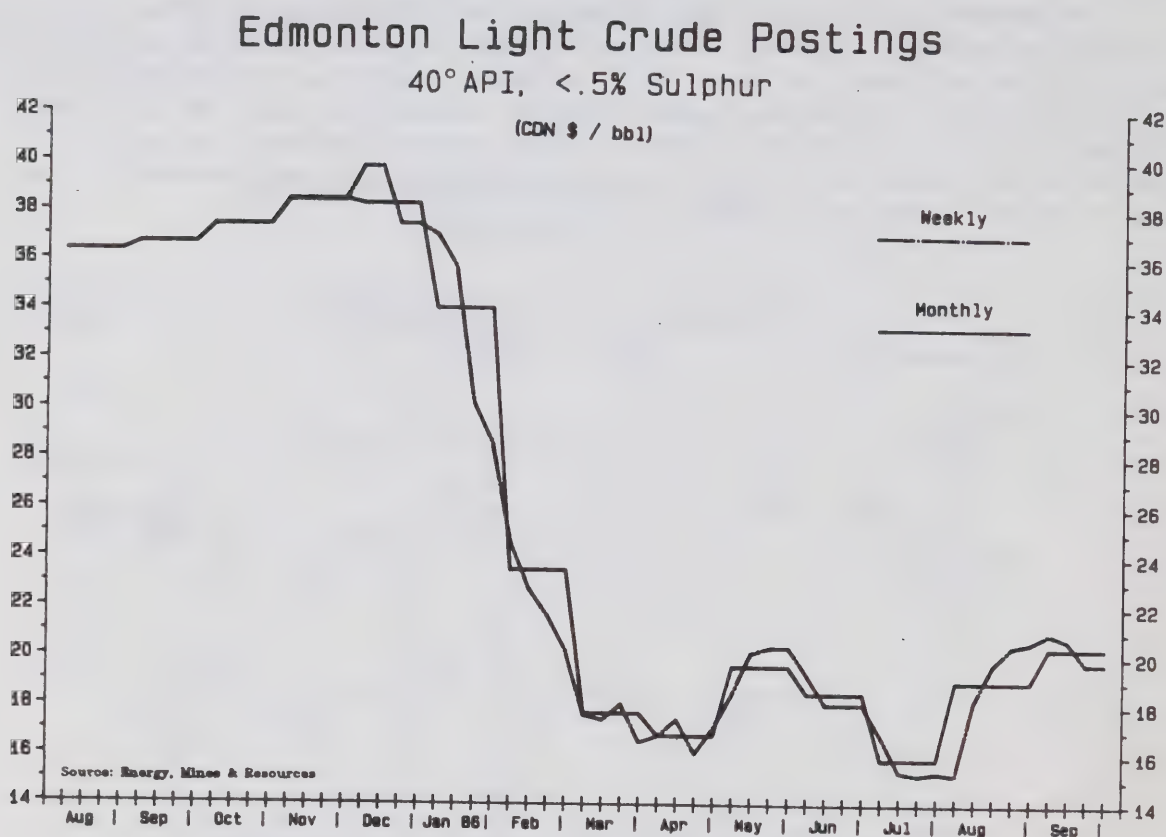


Source: Statistics Canada
National Energy Board

PRICES

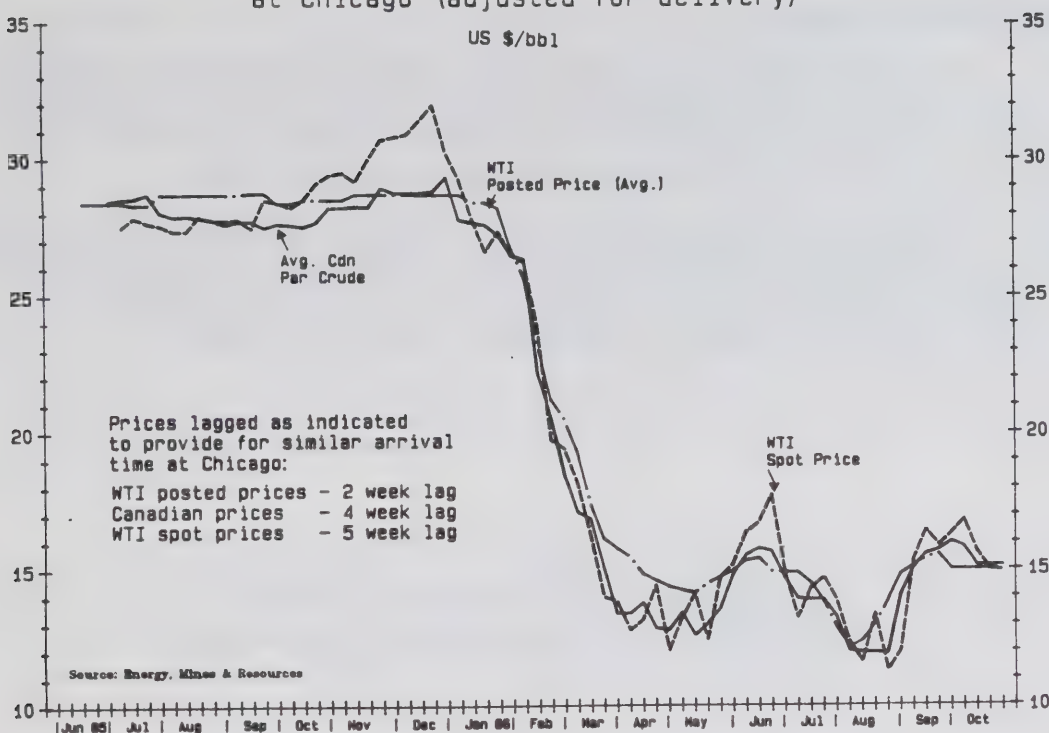
LIGHT CRUDE OIL

The average Canadian par crude (40°API, less than 0.5%S) price at Edmonton which was \$18.05 per barrel on July 1, dropped to a low of \$15.20 at the end of July, reflecting the international price reductions primarily caused by the global oil surplus. Canadian prices strengthened in August, reaching a high of \$21.25 at the beginning of September and then settled back to \$19.75 at the end of the month. The sharp price increase in August was in response to OPEC's decision to reduce and control crude supply.



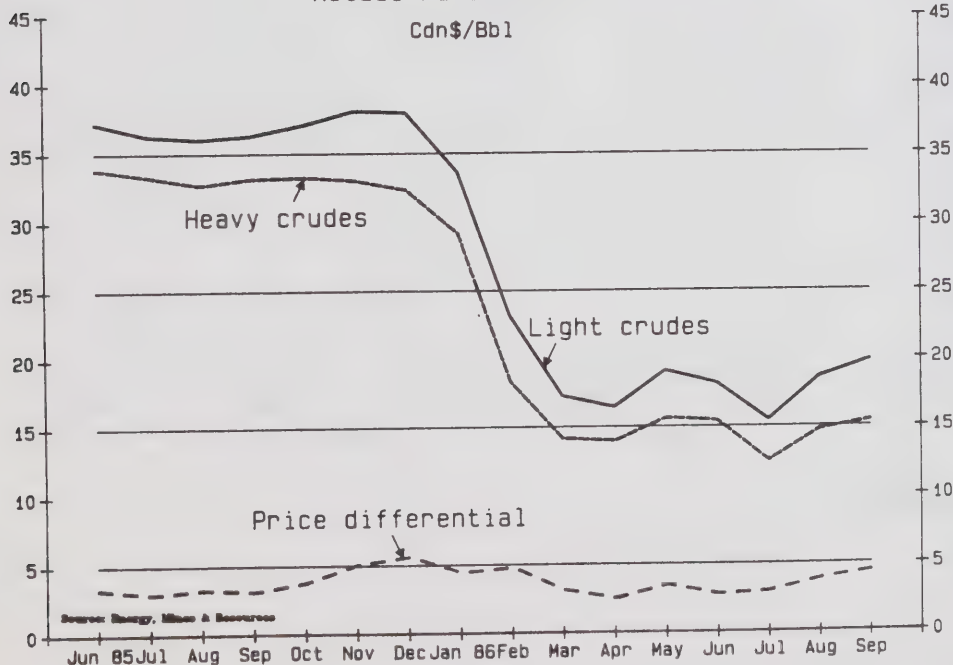
Canadian light crude oil prices continue to follow the trends in the international crude markets, primarily the U.S. benchmark crude West Texas Intermediate (WTI). After adjustments for delivery times, the correlation between posted and spot prices for WTI and Canadian par crude prices is evident.

Light Crude Oil Comparison at Chicago (adjusted for delivery)



Light Vs Heavy Crude

Actual Purchase Prices



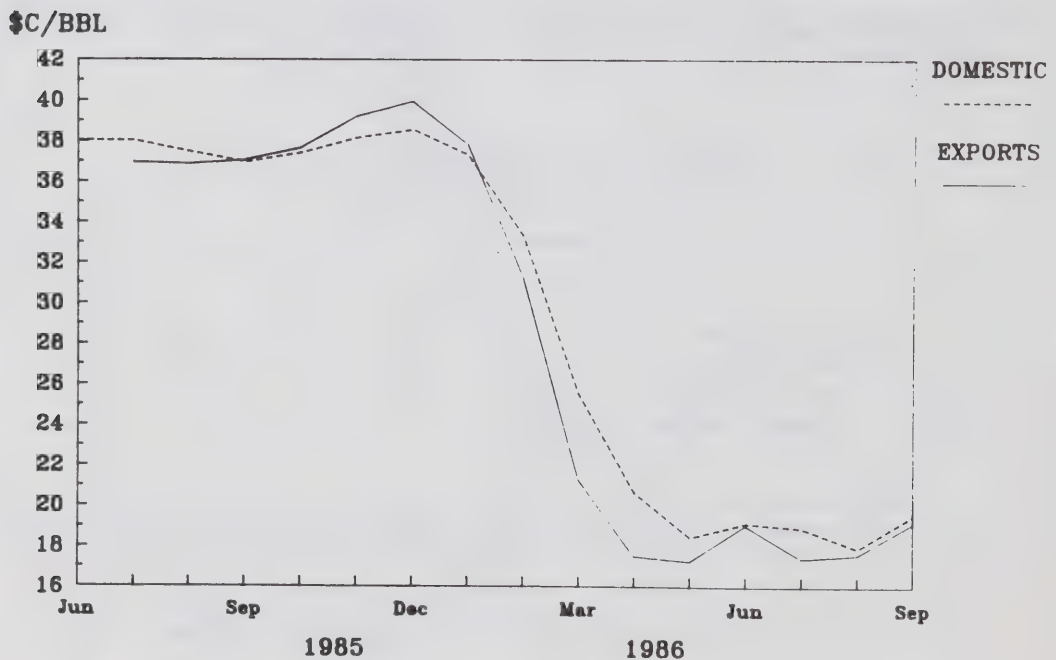
The graph above compares actual prices for conventional light and heavy crude oil purchased for use in Canada. On average, light crude oil quality was 38.1°API, 0.42% sulphur and heavy crude oil was 24.3°API, 2.74% sulphur. The price differential shown at the bottom of the graph is partially explained by the influence of seasonal factors on prices.

Light Crude Export Values

As illustrated on the following graph the difference between average light crude export values and Ontario average refiner acquisition cost, on a quality and transportation cost-adjusted basis, narrowed during the third quarter, and stood at less than \$0.50/bbl. in September.

Discounts relating to pipeline capacity constraints and exports of Alberta supplementary light crude oil into relatively low priced U.S. markets (Montana and Washington) continued to exert downward pressure on export values relative to domestic (Ontario) acquisition costs.

CANADIAN LIGHT CRUDE EXPORT AND ONTARIO DOMESTIC ACQUISITION VALUES



Source: Energy, Mines & Resources
National Energy Board

Product Prices

Retail prices for petroleum products continued to decline in the third quarter, albeit at a slower rate than in the second quarter. During the third quarter, average retail gasoline prices dropped by 1.4¢/litre, for a decline of more than 11¢/litre since January (see appendix 1).

Contributing to the modest third quarter gasoline decline, were provincial tax reductions by the five provinces having ad valorem rates, and a marginal reduction in the federal sales tax rate (see appendix 2). This marks the first downward adjustment in the federal sales tax rate since the precipitous decline in crude oil prices began in the first quarter of 1986. The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in the industrial product price index, with a one-quarter lag. Consequently, the full impact of the crude price decline over the first three quarters has yet to be reflected in lower federal sales tax rates.

During the third quarter, retail diesel prices were fractionally lower, with declines to-date in 1986 approaching 6¢/litre. While retail diesel price declines overall have been about 5¢/litre less than those of retail gasoline, the retail diesel market represents only about 15% of total diesel sales. Price declines to the commercial and industrial user (the bulk of diesel consumption) have been similar to those of gasoline.

Appendix 1

AVERAGE RETAIL PRICES,
REGULAR LEADED GASOLINE, 1985-1986

	1985 Dec.	1986 Mar.	1986 Jun.	1986 Sept.	Change Last 12 Months
	(Canadian cents per litre)				(%)
St. John's (Nfld.)	61.8	61.5	51.6	49.9	-16.6
Charlottetown	58.5	57.8	48.0	47.3	-18.3
Halifax	58.1	56.7	46.8	46.7	-19.1
Saint John (N.B.)	59.8	60.4	50.2	43.9	-21.5
Montreal	58.2	57.8	47.2	47.2	-18.2
Ottawa	52.2	51.5	44.9	41.6	-18.6
Toronto	50.7	48.4	40.3	38.7	-20.9
Winnipeg	54.2	51.6	45.6	45.6	-13.8
Regina	44.3	41.6	37.7	34.9	-20.0
Calgary	46.6	44.0	36.6	36.5	-20.5
Vancouver	55.5	52.8	42.7	40.0	-28.1
Canadian average	52.7	50.5	42.0	40.6	-21.6
Consumption taxes included:					
- Federal	6.8	7.1	7.5	7.5	11.9
- Provincial	7.6	7.6	7.5	7.1	-6.6

Appendix 2

CONSUMPTION TAXES ON PETROLEUM PRODUCTS, September 1, 1986

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(per cent)		(cents per litre)			
<u>Federal Taxes</u>						
Sales *			3.97	4.34	4.46	3.65
Excise			3.5	3.5	3.5	2.0
<u>Provincial Taxes</u>						
Newfoundland*	22	26	9.3	9.3	9.3	11.8
Prince Edward Island*	20	23	8.3	8.3	8.3	10.1
Nova Scotia*	20	21	8.2	8.2	8.2	8.6
New Brunswick*	20	23	8.0	8.5	8.8	9.0
Quebec (a)		-	13.65	14.4	14.7	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba	-	-	8.9	8.0	8.0	9.2
Saskatchewan	-	-	-	-	-	-
Alberta	-	-	-	-	-	-
British Columbia*	20(b)	20(b)	6.47	6.47	8.47	6.91
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	15	(c)	8.4	8.4	8.4	7.1

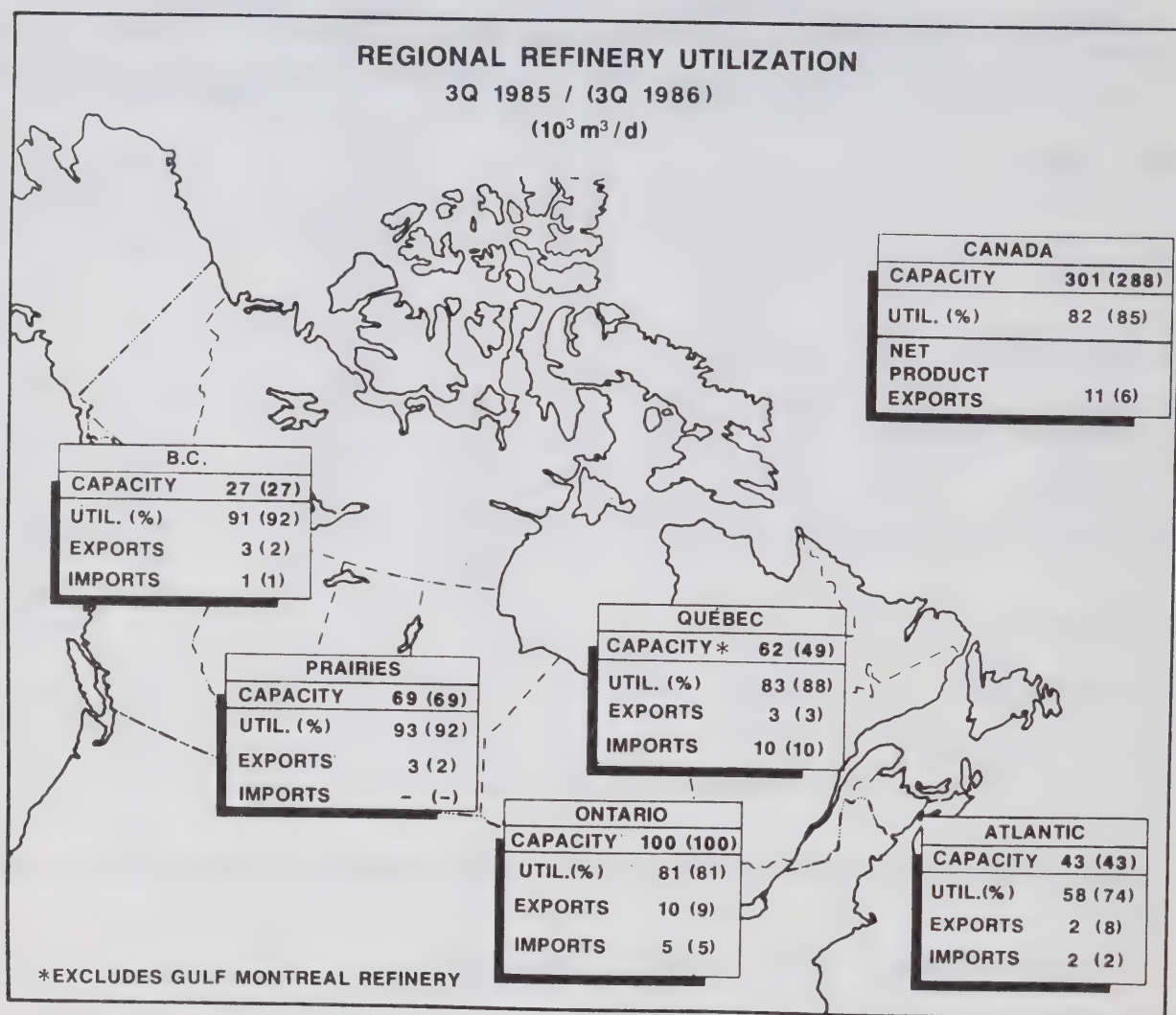
(a) Reduced by one third in certain remote areas and within 5 km of the provincial border.

(b) Additional transit tax of 0.95¢/l in Vancouver.

(c) 85% of gasoline tax.

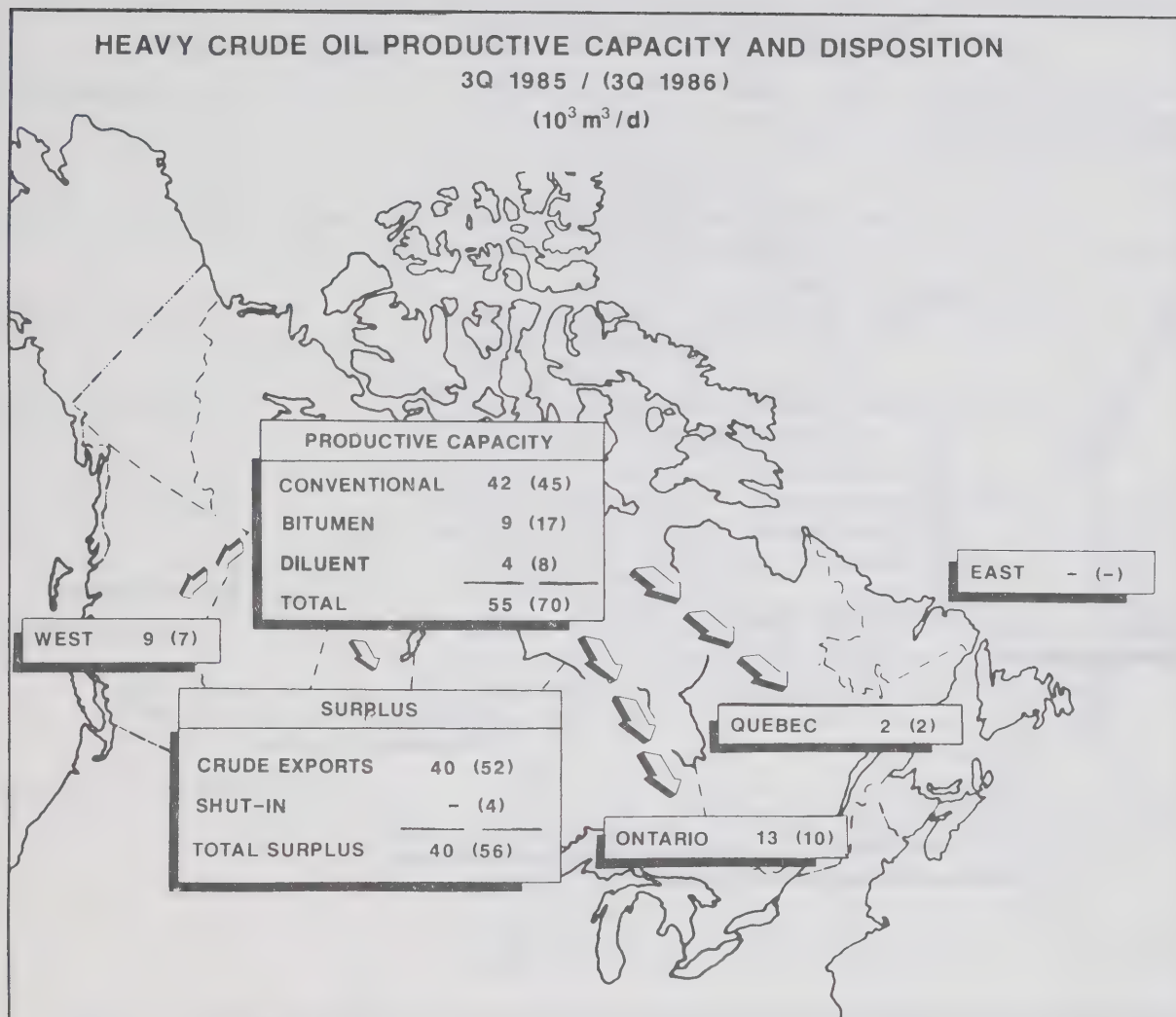
* Changed from last quarter

Appendix 3



Source: Statistics Canada

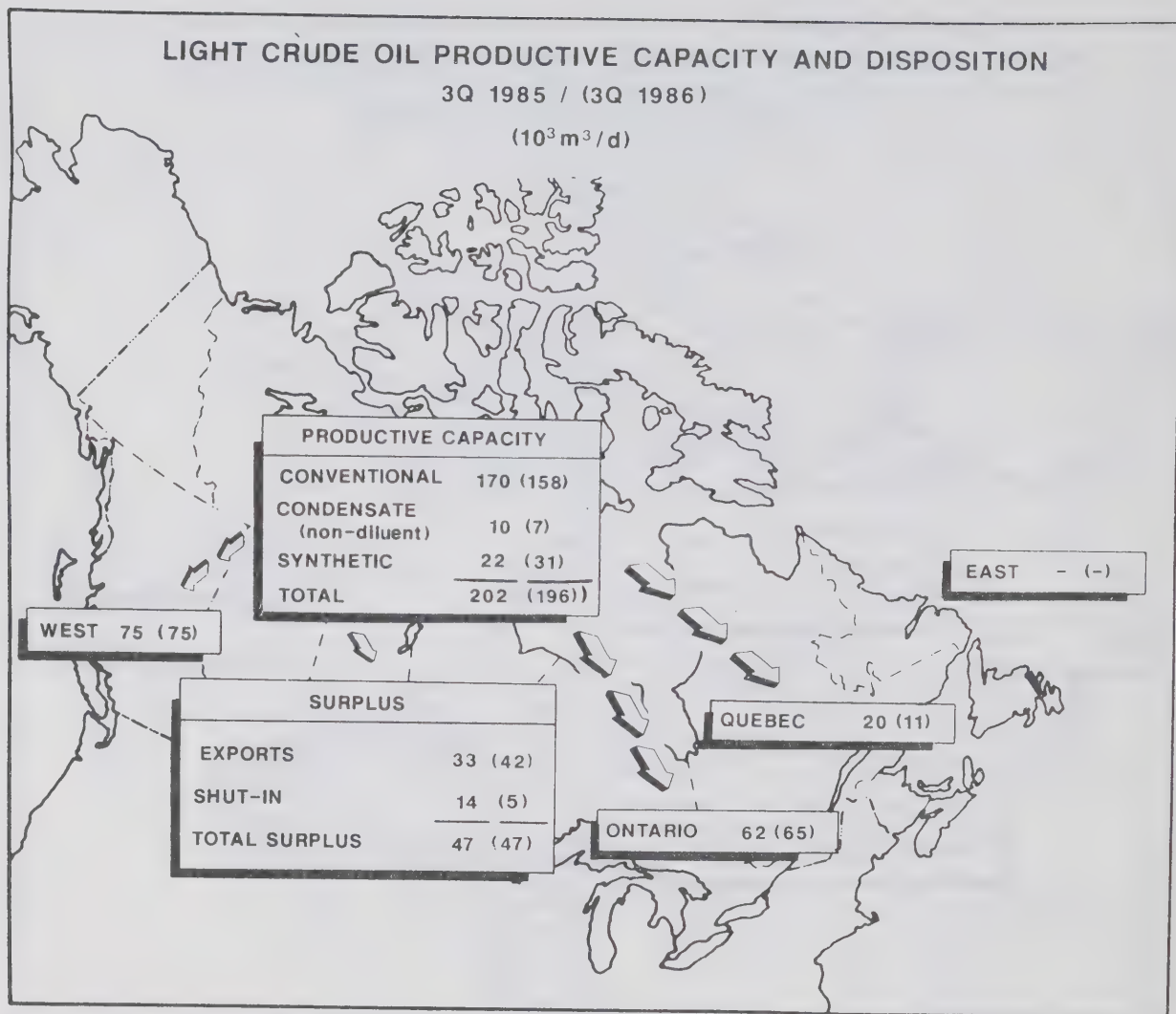
Appendix 4



Source: National Energy Board

NOTE: Differential between productive capacity and disposition attributed to stock change.

Appendix 5



Source: National Energy Board

NOTE: Differential between productive capacity and disposition attributed to stock change.

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.

Glossary (continued)

Pentanes plus

Also referred to as condensate. A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Productive capacity

Also referred to as producibility. The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.



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The Canadian Oil Market

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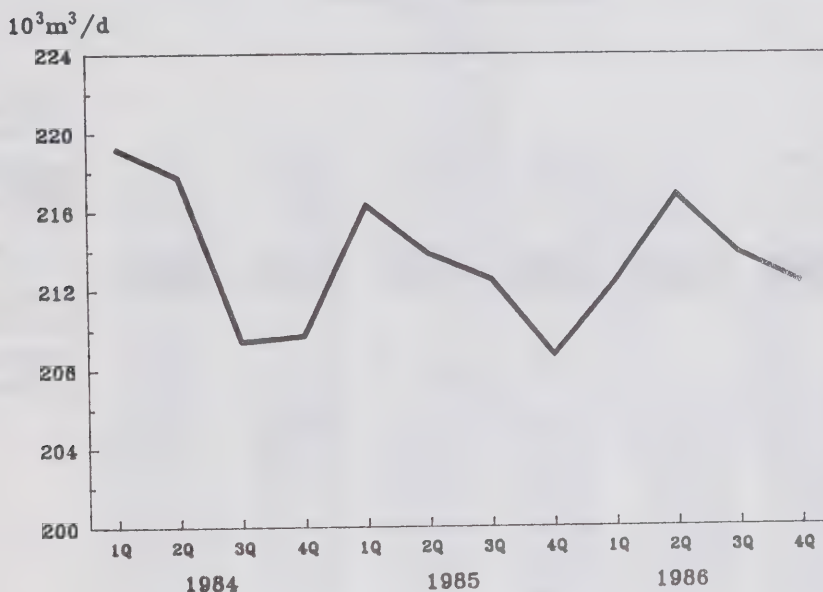
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THE CANADIAN OIL MARKET

DOMESTIC DEMAND

For the second consecutive quarter, seasonally adjusted petroleum product consumption declined, falling 0.7% in the fourth quarter of 1986. As a result of the drop in demand during the second half of the year, total consumption in Canada rose less than 0.5% during 1986, compared with 1985.

TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada

Much of the fourth-quarter decline was reflected in a sharp drop in heating oil demand (down 15%) from the third quarter, when a substantial inventory build had taken place. Despite an average decline of more than 30% in heating oil prices since early 1986, there seems to have been little impact on heating oil consumption compared with the 1985 average.

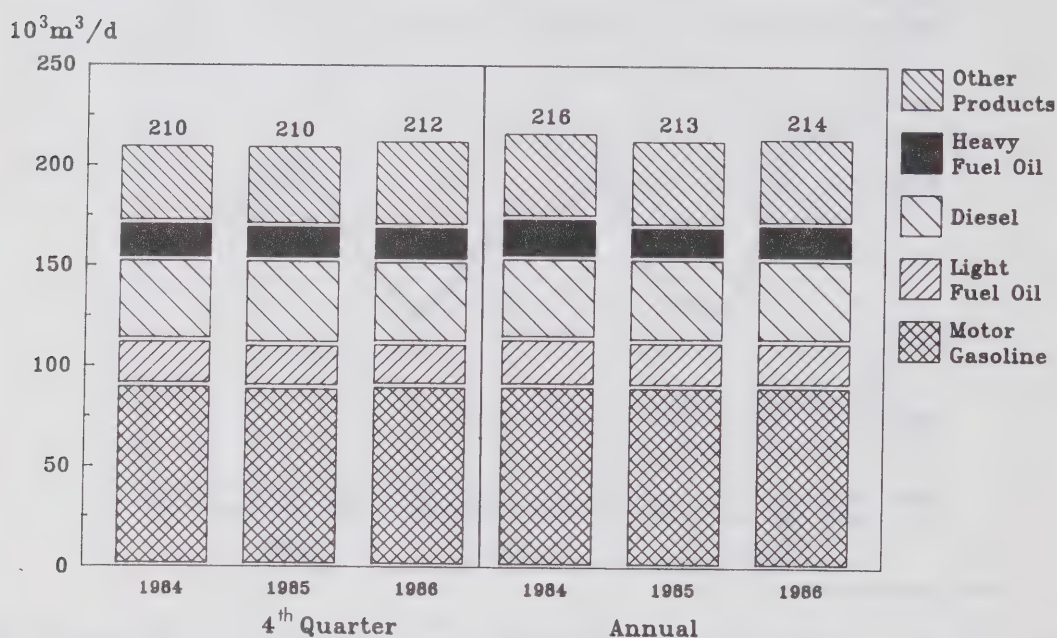
However, there was a marginal increase in demand (1.4%) in the fourth quarter versus the fourth quarter of 1985 even though temperatures across Canada were more than 7% warmer than in the fourth quarter of 1985. There may have been a greater consumer inventory build in the fourth quarter 1986 compared with 1985.

Unlike heating oil, the decline in motor gasoline in the fourth quarter was marginal. Gasoline consumption, at about $90 \times 10^3 \text{m}^3/\text{d}$ in both the fourth quarter and the year as a whole, was 0.4% greater than the 1985 level.

As the Canadian economy firmed during the fourth quarter, diesel fuel oil demand rose by 3.5% to $41 \times 10^3 \text{m}^3/\text{d}$, after declining through the first nine months of 1986. However, on an annual basis diesel consumption fell about 0.7% reflecting lower demand in British Columbia, the Prairies and the Atlantic region.

Of the major petroleum products only heavy fuel oil showed any significant demand growth in 1986, with consumption increasing about $1.5 \times 10^3 \text{ m}^3/\text{d}$ (9%), to $17.3 \times 10^3 \text{ m}^3/\text{d}$. Much of this growth was due to fuel switching as heavy fuel prices were relatively more competitive with alternatives, such as natural gas and electricity.

PETROLEUM PRODUCT CONSUMPTION BY PRODUCT (Seasonally Adjusted)

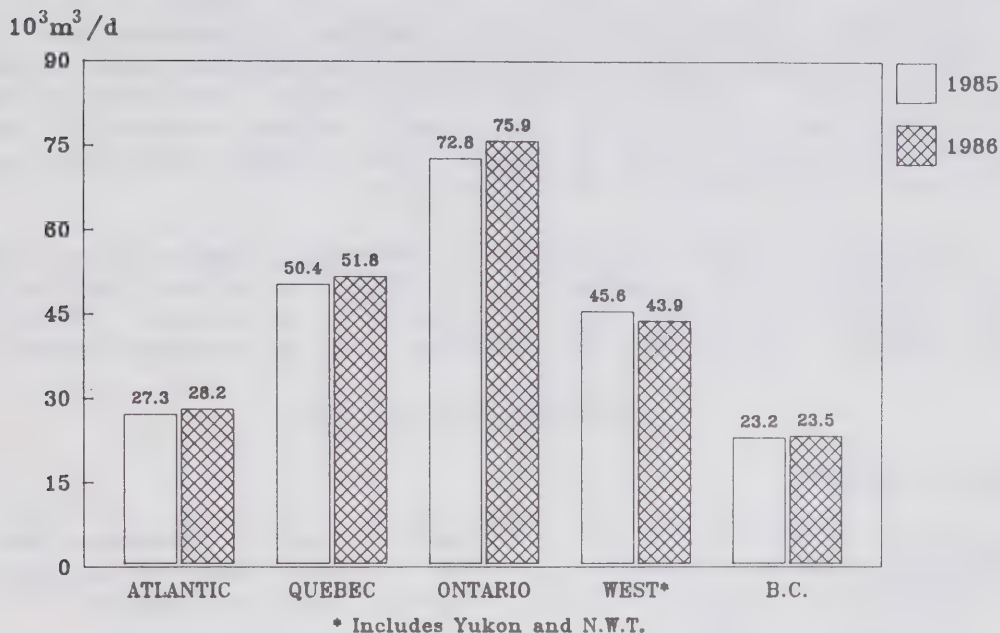


Source: Statistics Canada

On a regional basis, with the exception of the Prairies where consumption declined by over 5% because of a sluggish economy, consumption in all other regions registered an increase over the fourth quarter from a year ago. After declining on a year-over-year basis in the three previous quarters, Quebec petroleum products consumption rose by 3.4%. Consumption in Ontario increased by approximately 4%, the largest growth among all provinces. Increases in Ontario and Quebec appear to be related to strength in the economy.

Throughout 1986 divergent economic growth rates in the regions were evident in oil consumption patterns. Ontario, with its manufacturing-based economy benefiting from lower crude prices, experienced a jump of almost 4% in demand. However in the Prairies falling prices for wheat and oil, two mainstays of that economy, contributed to poor economic growth and a 2.5% drop in oil demand.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Fourth Quarter)



Source: Statistics Canada

Annual Petroleum Product Sales*

	<u>1985</u> ($10^3 \text{ m}^3/\text{d}$)	<u>1986</u>	<u>% change from 1985</u>
Atlantic	25.5	25.7	+0.8
Quebec	46.7	45.8	-1.9
Ontario	71.7	74.3	+3.8
Prairies	45.9	44.8	-2.4
British Columbia	<u>23.0</u>	<u>23.3</u>	<u>+1.3</u>
Canada	212.8	213.9	+0.5

* Excludes consumption and losses at refineries

In summary, final sales of petroleum products increased about 0.5% ($1 \times 10^3 \text{ m}^3/\text{d}$) in 1986. This increase reversed six years of declining demand, dating back to 1980. However the increase in Canada was modest, compared with consumption increases of 3.4% in Western Europe, and 2.5% in the United States. While it is difficult to quantify the varying impacts of the crude oil price decline on Canada and other countries, there are several factors which may have contributed to the short-term difference.

As Canada was relatively slow in moving to international oil price levels, the impact of higher prices on oil conservation and substitution continued into 1986. As well, in the United States the relative decline in gasoline prices was greater than in Canada, mainly because of the higher proportion of government taxes in Canada. As a result, the jump in gasoline consumption was much greater in the United States.

In addition, with most European currencies appreciating against the U.S. dollar (more than the Canadian dollar did) the decline (in U.S. dollars) in crude prices during 1986 was even greater in Europe. This possibly stimulated demand, particularly for residual oils, to a greater extent than in Canada.

REFINERY UTILIZATION*

In the fourth quarter the national refinery utilization rate fell 6 percentage points from the previous quarter to about 79%, reflecting the usual refinery maintenance turnarounds which generally occur in October.

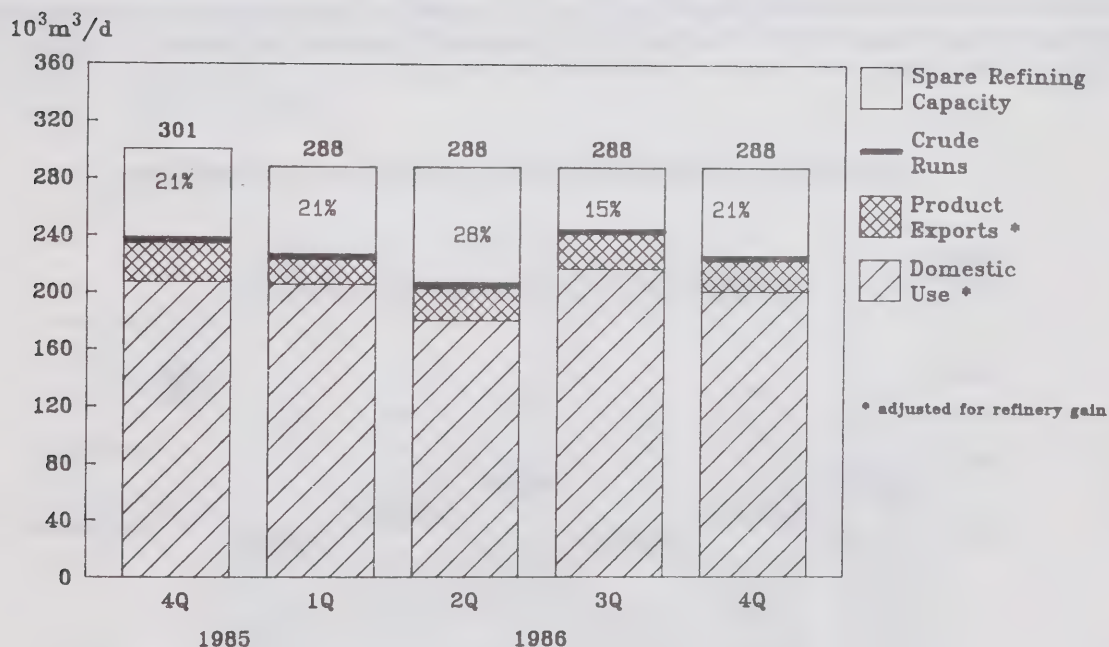
Despite a decline in crude oil and equivalent throughput of $12 \times 10^3 \text{ m}^3/\text{d}$, to $226 \times 10^3 \text{ m}^3/\text{d}$, compared with the fourth quarter of 1985, the utilization rate remained unchanged at 79%, as a result of the closure of the Montreal Gulf refinery in early 1986. The drop in throughput was attributable to a greater product inventory drawdown and a drop in net exports which were partially offset by an increase in consumption. (Appendix 4 provides further details.)

On an annual basis, the refinery utilization rate increased by about 2 percentage points to 78.5% even though crude and equivalent run to stills declined $5 \times 10^3 \text{ m}^3/\text{d}$ to $226 \times 10^3 \text{ m}^3/\text{d}$. The decline in throughput during 1986 represented the continuation of a trend of declining crude demand, which began in the early 1980s. In the past, declines in product consumption and product inventory rationalization had caused refiners to reduce refinery operations. In 1986, a substantial drop ($7 \times 10^3 \text{ m}^3/\text{d}$) in net product exports was the main factor affecting throughput. The drop in product exports and the increase in product imports were directly related to the drop in product prices worldwide and the greater product price volatility in the United States, which provided product purchase opportunities for product importers.

* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

As a result of a major crude import and product export agreement in the Atlantic, the refinery utilization rate rose, from 53% to 68%. In Quebec, as a result of the Gulf refinery closure at the beginning of the year, the utilization rate jumped 6 percentage points, despite a fall of about $7 \times 10^3 \text{ m}^3/\text{d}$ (15%) in crude oil refined, which reflected an inventory drawdown, a sharp drop in net product exports and a continued decline in consumption in Quebec. Western Canadian throughput remained unchanged at about 85%. In Ontario, refinery utilization declined to 76%, from 79% in 1985, even though domestic product demand rose by 3%. A 50% drop in the net product export position, and an increase in product receipts from other provinces, were the main factors contributing to the decline in refinery usage in Ontario.

REFINERY UTILIZATION



Source: Statistics Canada;
Energy, Mines & Resources

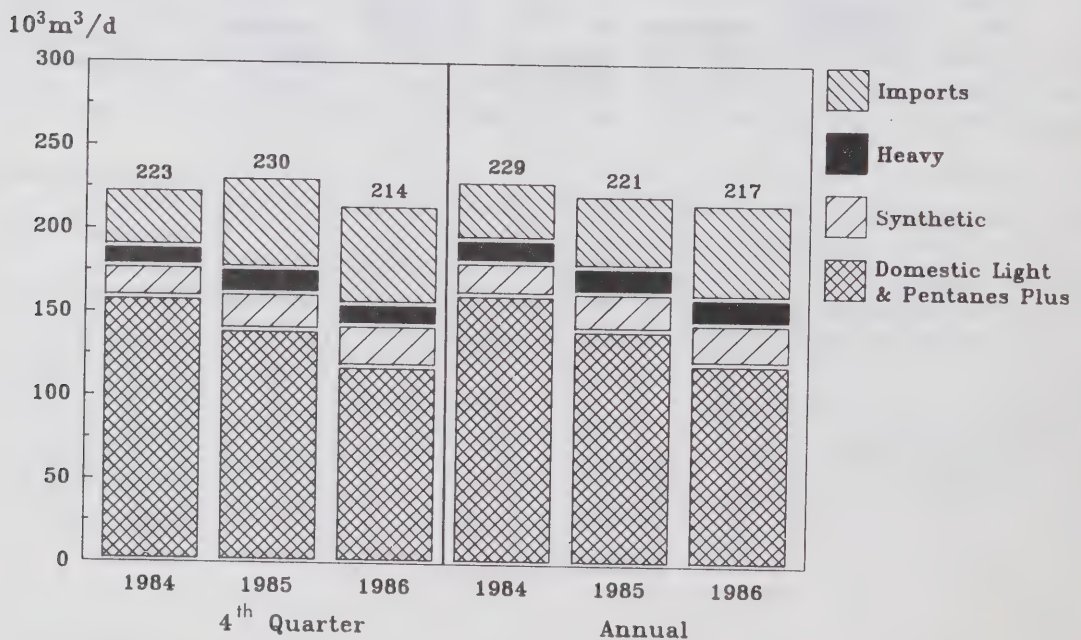
CRUDE OIL REQUIREMENTS

In the fourth quarter total crude oil deliveries to Canadian refineries declined by almost $16 \times 10^3 \text{ m}^3/\text{d}$, to $214 \times 10^3 \text{ m}^3/\text{d}$, from the fourth quarter 1985. Receipts of domestic light crude fell by almost $23 \times 10^3 \text{ m}^3/\text{d}$, while imports were up about $5 \times 10^3 \text{ m}^3/\text{d}$. Synthetic crude oil receipts increased in both relative and absolute terms, while domestic heavy crude requirements remained constant at about 7% of the total. A decline in the net product export position of $9 \times 10^3 \text{ m}^3/\text{d}$ and a greater inventory drawdown in the fourth quarter 1986 were the two main factors contributing to the drop in receipts.

On an annual basis the decline in crude oil receipts was less pronounced, however there was a shift in the domestic/import composition. As a result of deregulation, domestic light crude oil receipts fell $19 \times 10^3 \text{ m}^3/\text{d}$ and accounted for about 53% of total requirements in 1986 versus 62% in 1985. Most of the decline in domestic light crude receipts was offset by a $13 \times 10^3 \text{ m}^3/\text{d}$ increase in imports, which represented 26% of total crude oil receipts in 1986.

Given an assumed decline in conventional light crude productive capacity, and depending on the economics of the export market versus the Canadian market for domestic light crude, the 1986 composition of crude oil receipts is likely to continue for the foreseeable future with the trend toward increased requirements for synthetic crude and imports if domestic light crude deliveries decline.

CRUDE OIL RECEIVED AT CANADIAN REFINERIES



Source: National Energy Board

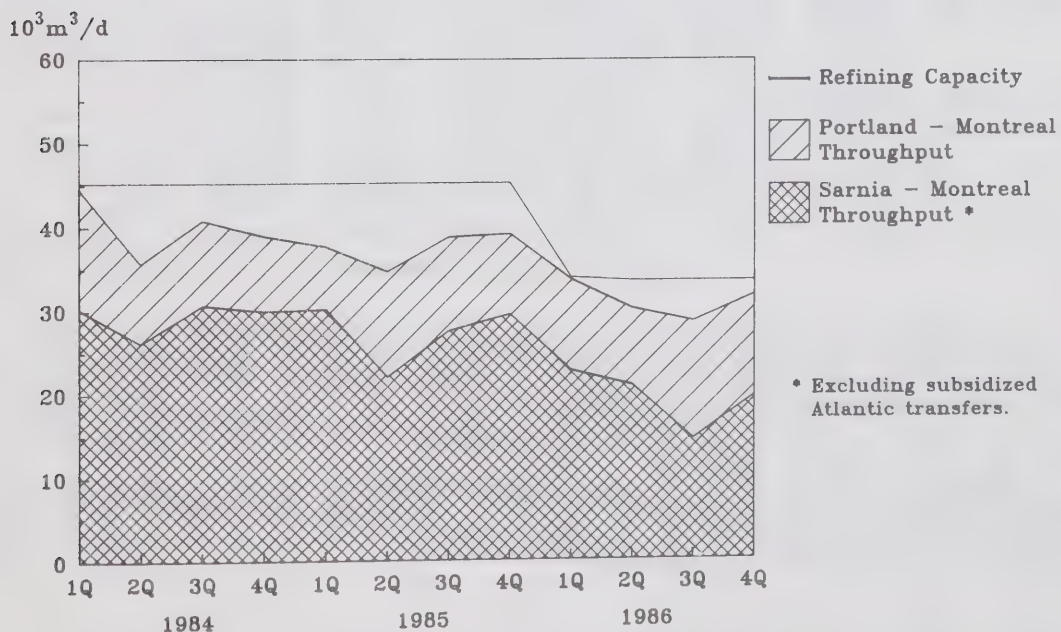
MONTREAL CRUDE USE

Sarnia-Montreal throughput in the fourth quarter was $19 \times 10^3 \text{ m}^3/\text{d}$, $5 \times 10^3 \text{ m}^3/\text{d}$ higher than during the previous quarter. This increase is attributable to pipeline apportionment during the third quarter, higher oil product consumption, spot exports from Montreal, and the price advantage (cheaper than offshore light crude) of Canadian light crude during the fourth quarter. Portland pipeline throughput declined from the previous quarter due, in part, to Canadian crudes being more attractive than foreign crudes, however, it rose by over 25% from a year ago.

For the year 1986, total Montreal crude oil receipts averaged $31 \times 10^3 \text{ m}^3/\text{d}$, a reduction of over $6 \times 10^3 \text{ m}^3/\text{d}$, or 17%, from 1985 levels.

Sarnia-Montreal pipeline throughput in 1986 averaged $19 \times 10^3 \text{ m}^3/\text{d}$, down 29% from the year earlier. This was the lowest yearly throughput level registered since the pipeline began operation. This reduction reflects the further decline in oil product consumption in Quebec, the Gulf refinery closure, a deterioration in oil petroleum product trade and substitution of domestic crude by imported crude. Reduced throughput for Montreal requirements was somewhat offset by occasional shipments of heavy crude oil to Montreal for export. During the same period, Portland pipeline throughput rose by 14%, to almost $12 \times 10^3 \text{ m}^3/\text{d}$, which represented 37% of total Montreal crude receipts in comparison to only 27% a year ago. The increase in imported crude resulted from pipeline bottlenecks in Western Canada and opportunities to purchase relatively less expensive foreign crude, in particular during early winter and mid-summer.

MONTREAL REFINING CAPACITY AND PIPELINE THROUGHPUT

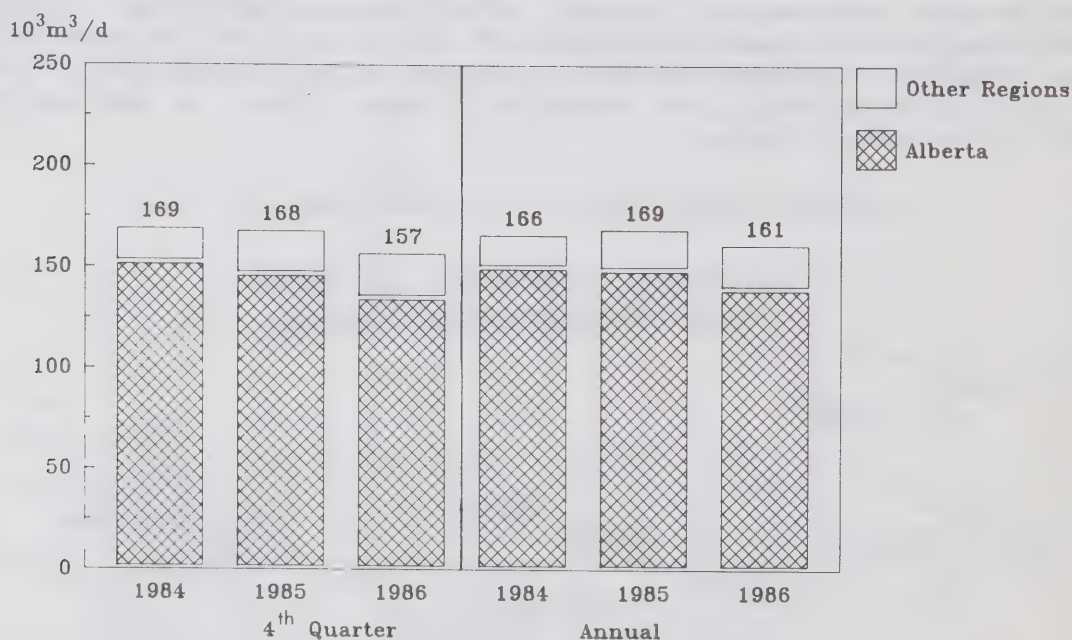


AVAILABLE SUPPLY

During the second half of 1986 the rate of decline in Alberta conventional light crude productive capacity accelerated, while the growth in heavy crude capacity slowed. As a result, in the fourth quarter, for the first time in several years, total conventional crude oil productive capacity* declined on a year-over-year basis, by $5 \times 10^3 \text{ m}^3/\text{d}$, to $227 \times 10^3 \text{ m}^3/\text{d}$. However, on an annual basis, the growth in heavy crude capacity more than offset the decline in conventional light crude. Total conventional crude capacity rose about $3 \times 10^3 \text{ m}^3/\text{d}$, to $228 \times 10^3 \text{ m}^3/\text{d}$, in 1986 compared to 1985.

Alberta conventional light and medium crude oil productive capacity declined about $12 \times 10^3 \text{ m}^3/\text{d}$ (8%), to $134 \times 10^3 \text{ m}^3/\text{d}$, from the fourth quarter of 1985 to the fourth quarter of 1986. The acceleration in the rate of decline is, in part, attributable to the severe decline in exploration and development drilling resulting from the fall in crude prices in early 1986. During the last nine months of 1986, only about 150 of 550 oil drilling rigs were active in Canada, compared to about 400 active rigs in the same period in 1985.

CONVENTIONAL LIGHT CRUDE PRODUCTIVE CAPACITY

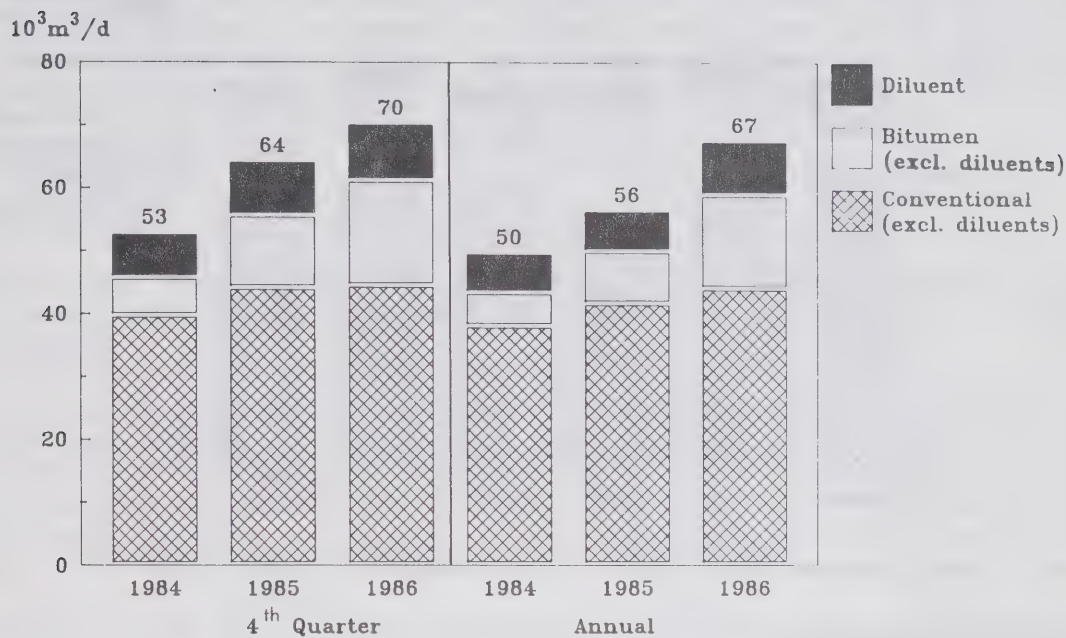


Source: National Energy Board

The strong growth in bitumen supply which had occurred from 1984 to first half 1986, levelled off in the second half of the year reflecting a slowdown in development (price impact) and the completion of some major projects. Total heavy crude oil capacity, including diluents was $70 \times 10^3 \text{ m}^3/\text{d}$ in the fourth quarter, unchanged from the third quarter of 1986, but $6 \times 10^3 \text{ m}^3/\text{d}$ higher than the fourth quarter of 1985. Despite the slowdown in growth, on an annual basis, capacity continued to rise, increasing by $11 \times 10^3 \text{ m}^3/\text{d}$, to $67 \times 10^3 \text{ m}^3/\text{d}$ in 1986.

* Excludes synthetic crude production and pentanes plus for non-diluent purposes.

HEAVY CRUDE PRODUCTIVE CAPACITY



Source: National Energy Board

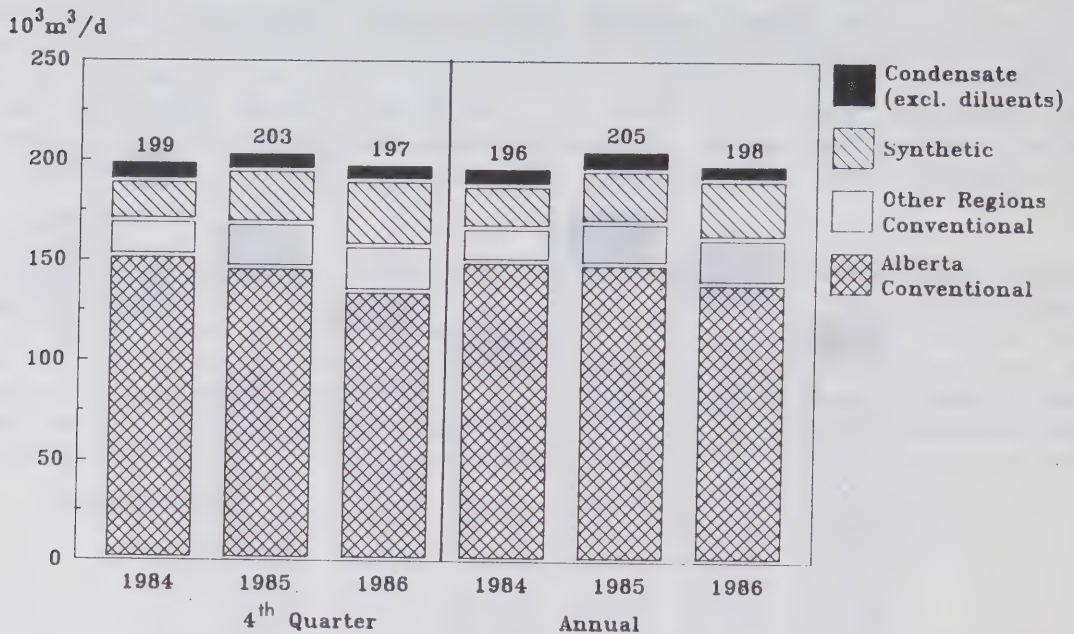
As a result of the highest ever monthly synthetic crude oil production rate in December ($34.5 \times 10^3 \text{m}^3/\text{d}$) another record for synthetic crude output was reached in the fourth quarter of 1986.

As was the case in 1985, both Suncor and Syncrude synthetic oil plants operated without serious technical or operational problems during 1986. Primarily due to greater production at the Suncor plant in 1986, synthetic output rose $3 \times 10^3 \text{m}^3/\text{d}$, to $29 \times 10^3 \text{m}^3/\text{d}$. During much of the year the plants operated at more than 100 per cent of estimated sustainable capacities (which accounts for maintenance downtime).

Total condensate production remained unchanged in 1986, at nearly $16.5 \times 10^3 \text{m}^3/\text{d}$, however diluent requirements for blending with heavy crude rose more than $2 \times 10^3 \text{m}^3/\text{d}$ to $8.6 \times 10^3 \text{m}^3/\text{d}$ ($9.4 \times 10^3 \text{m}^3/\text{d}$ if recycled diluent from refineries at Lloydminster and Edmonton is included).

Including actual production of synthetic crude and condensate with light and heavy crude producibility, fourth quarter total available supply of domestic crude oil remained unchanged from the fourth quarter of 1985, at $267 \times 10^3 \text{m}^3/\text{d}$. For the year, total available supply rose $4 \times 10^3 \text{m}^3/\text{d}$ to $265 \times 10^3 \text{m}^3/\text{d}$. (Appendix 7 illustrates available supply over 1983-1986 period.)

TOTAL LIGHT CRUDE OIL AND EQUIVALENT AVAILABLE SUPPLY



Source: National Energy Board

PRODUCTION AND SHUT-IN

In both the fourth quarter and the year 1986 light crude and equivalent production (including synthetic oil) declined, compared with the prior-year periods. During the fourth quarter production fell over $12 \times 10^3 \text{m}^3/\text{d}$, mainly reflecting lower domestic requirements. The decline in conventional light crude production was greater than the fall off in capacity. As a result shut-in capacity doubled, to $14 \times 10^3 \text{m}^3/\text{d}$, in the fourth quarter.

On an annual basis the decline in light crude production, of about $10 \times 10^3 \text{m}^3/\text{d}$, to $185 \times 10^3 \text{m}^3/\text{d}$, is mainly attributable to pipeline constraints on the Interprovincial Pipeline (IPL) system. Despite some additions to capacity IPL was not able to transport all available light crude because of continued growth in heavy crude output, and the fact that light crude capacity did not decline as fast as previously envisioned. In addition, domestic light crude oil requirements fell, reflecting the re-orientation of light crude markets (a shift from domestic to export markets), and a reduction in Canadian light crude oil requirements.

While the Interprovincial Pipeline operated at capacity in 1986, both Trans Mountain and Rangeland System had excess capacity. Supplementary sales of Alberta light crude, which began in October of 1985, averaged more than $9 \times 10^3 \text{m}^3/\text{d}$ in 1986. The majority of supplementary sales were to U.S. refiners in the states of Montana and Washington, at prices lower than in the Chicago and mid-U.S. markets. Despite the supplementary sales system, excess capacity on Trans Mountain and Rangeland continued periodically in 1986, reflecting, in part, the impact of the provincial prorationing system. About $13 \times 10^3 \text{m}^3/\text{d}$ of Alberta light crude was shut-in in 1986, compared with $10 \times 10^3 \text{m}^3/\text{d}$ in 1985.

Heavy crude production reached $67 \text{ } 10^3 \text{m}^3/\text{d}$ in the fourth quarter, up marginally from the third quarter of 1986, as the growth in heavy crude output slowed. About 5%, or $3.5 \text{ } 10^3 \text{m}^3/\text{d}$, of heavy crude capacity was shut-in.

Despite the dampening affect of the drop in crude prices, in 1986 heavy crude output increased for the sixth consecutive year. Much of the growth in the last three years has been in the non-conventional, or bitumen, category. Blended bitumen production exceeded $20 \text{ } 10^3 \text{m}^3/\text{d}$ in 1986, out of a total output of $63 \text{ } 10^3 \text{m}^3/\text{d}$, compared to total production of $54 \text{ } 10^3 \text{m}^3/\text{d}$ in 1985. Shut-in rose from about $2.5 \text{ } 10^3 \text{m}^3/\text{d}$ in 1985, to $4 \text{ } 10^3 \text{m}^3/\text{d}$ in 1986. (Appendices 5, 6 and 8 provide more detailed information.)

EXPORTS AND IMPORTS

i) Crude Exports

Total crude oil exports to refiners in the United States averaged approximately $94 \text{ } 10^3 \text{m}^3/\text{d}$ in 1986, an increase of almost $19 \text{ } 10^3 \text{m}^3/\text{d}$ from a year ago.

Despite a decline of $9 \text{ } 10^3 \text{m}^3/\text{d}$ of Alberta conventional light crude oil productive capacity, light crude oil exports jumped by almost $8 \text{ } 10^3 \text{m}^3/\text{d}$ to $41 \text{ } 10^3 \text{m}^3/\text{d}$ in 1986, compared with 1985. The increase in exports reflected the reorientation of markets after deregulation and the Alberta supplementary sales system. Exports could have been greater but there was insufficient capacity on the IPL system to transport all the crude oil available.

Throughout 1986, heavy crude oil exports continued to rise, while domestic demand remained constant. Exports grew by $11 \text{ } 10^3 \text{m}^3/\text{d}$, to $52 \text{ } 10^3 \text{m}^3/\text{d}$ in 1986. Further expansion into the northern U.S. market may be limited by refinery capacity in this region.

During the fourth quarter of 1986, total crude oil exports were $98 \text{ } 10^3 \text{m}^3/\text{d}$, an increase of $4.5 \text{ } 10^3 \text{m}^3/\text{d}$ from the previous quarter, and $17 \text{ } 10^3 \text{m}^3/\text{d}$ from a year ago. Light crude oil exports remain unchanged from the previous quarter at $41 \text{ } 10^3 \text{m}^3/\text{d}$ but up $9 \text{ } 10^3 \text{m}^3/\text{d}$ from the fourth quarter of 1985. Lack of pipeline capacity, particularly for movements to the U.S. mid-west, constrained exports during the latter half of 1986. Heavy crude oil production averaged $67 \text{ } 10^3 \text{m}^3/\text{d}$, up only marginally from the third quarter 1986, however, exports grew by $4 \text{ } 10^3 \text{m}^3/\text{d}$, to $56 \text{ } 10^3 \text{m}^3/\text{d}$, reflecting a seasonal drop in Canadian demand. In the expectation that further expansion into the U.S. northern tier will be increasingly difficult, heavy crude producers made several spot sales to offshore destinations, including southeast Asia.

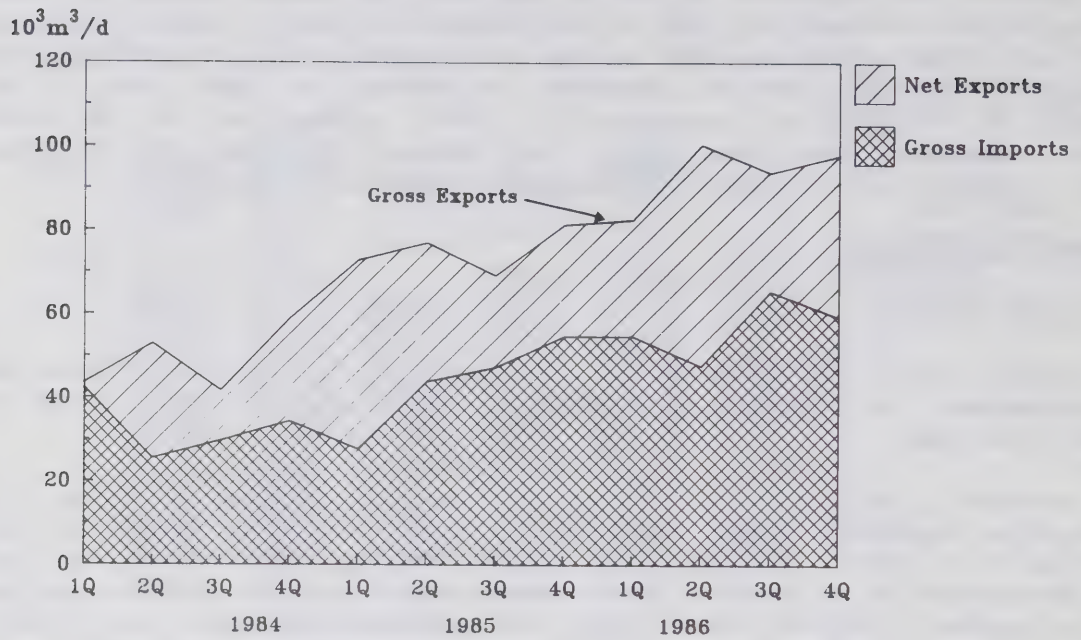
ii) Crude Imports

In 1986, crude oil imports rose sharply, from $43 \text{ } 10^3 \text{m}^3/\text{d}$ to $59 \text{ } 10^3 \text{m}^3/\text{d}$, due to deregulation, a major processing/product export agreement (Atlantic provinces) which started in mid-1985, attractive crude prices and domestic pipeline constraints. During the fourth quarter, crude oil imports rose by almost $5 \text{ } 10^3 \text{m}^3/\text{d}$, to $59 \text{ } 10^3 \text{m}^3/\text{d}$, as a result of substantial imports in Quebec.

As a result of the increase in crude imports and a decline in the net product export position, Canada's oil import dependence*, expressed as a percentage of domestic oil consumption, rose to 24% in 1986, fom 15% in 1985.

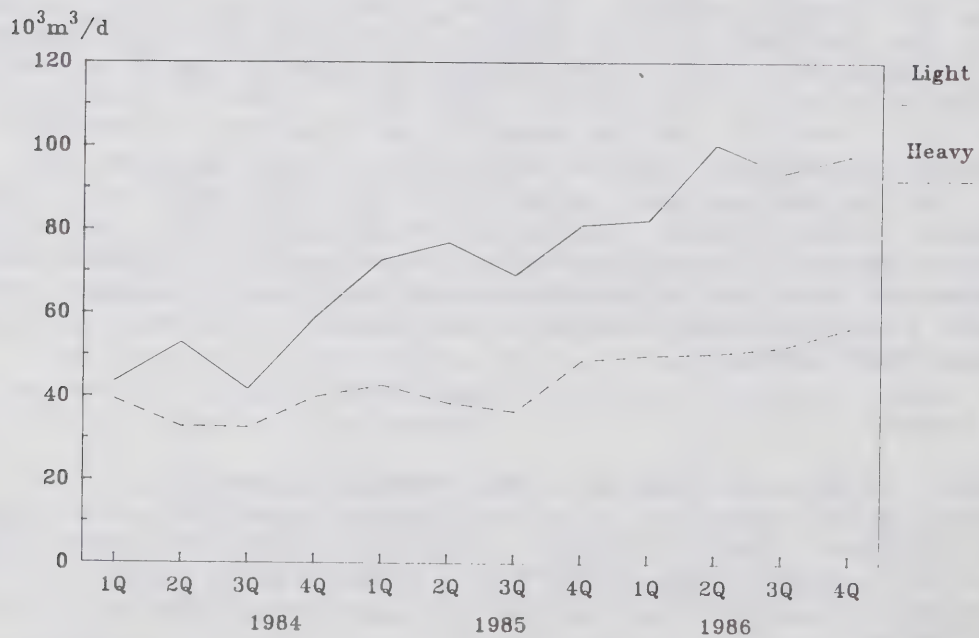
* Crude oil imports less net refined oil product exports.

CRUDE OIL EXPORTS AND IMPORTS



Source: Statistics Canada

CRUDE OIL EXPORTS



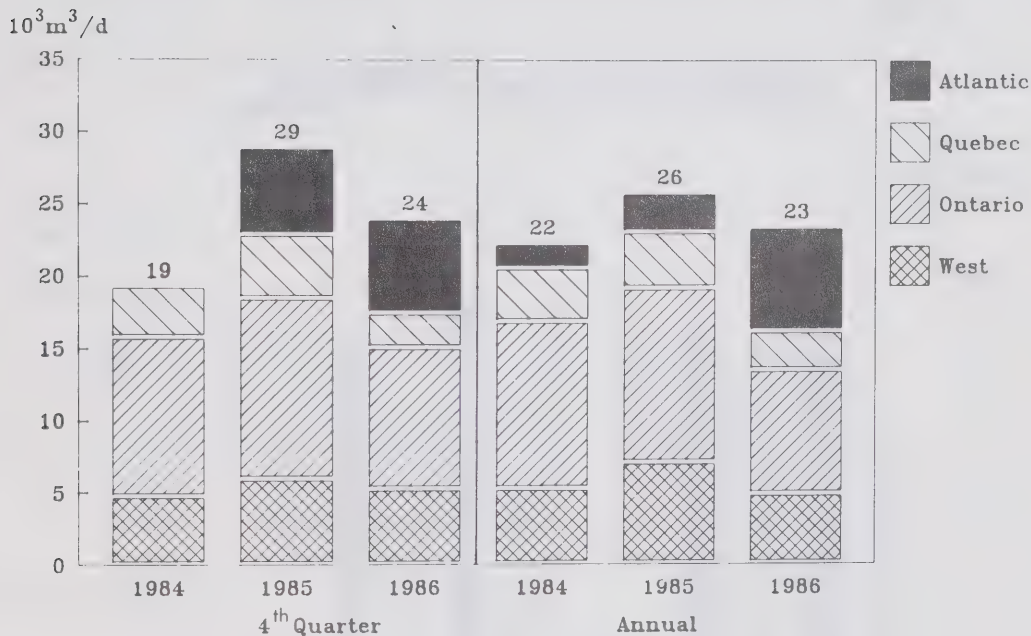
Source: National Energy Board

iii) Petroleum Products

The trade surplus in refined petroleum products declined in 1986, particularly in the first half of the year, when wide gaps between Canadian and American wholesale products prices lead to an increase in imports and a decline in exports. Product imports increased, from 13 $10^3\text{m}^3/\text{d}$ last year to 19 $10^3\text{m}^3/\text{d}$ in 1986, while exports declined 3 $10^3\text{m}^3/\text{d}$, to 23 $10^3\text{m}^3/\text{d}$. As a result the product trade surplus declined by 9 $10^3\text{m}^3/\text{d}$.

For reasons already mentioned, only exports out of the Atlantic increased in 1986. Exports from Ontario, Quebec and the West declined by over a third to about 16 $10^3\text{m}^3/\text{d}$. Virtually all of these exports were to the highly-competitive Pacific, mid-west and north eastern regions of the United States.

GROSS REGIONAL PETROLEUM PRODUCT EXPORTS



Source: Statistics Canada

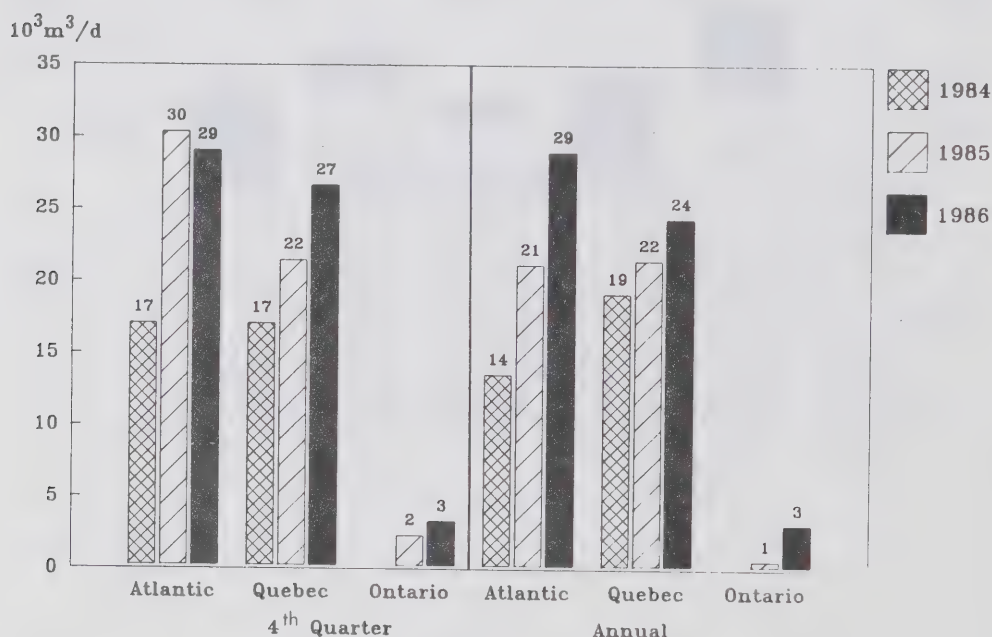
SOURCES OF CRUDE OIL IMPORTS

Receipts of foreign crudes in 1986 into the Atlantic provinces, representing about 60% of all imports, increased by $8 \times 10^3 \text{ m}^3/\text{d}$ to $29 \times 10^3 \text{ m}^3/\text{d}$, from 1985; however, fourth-quarter imports, also at $29 \times 10^3 \text{ m}^3/\text{d}$, were down by 4% from the same quarter a year earlier. Atlantic imports have appreciated significantly since 1985 reflecting the termination of the Atlantic Transfer Program, and refiner agreements to import crude for refining and re-export.

Imports into Quebec, which accounted for 44% of all crude imports during 1986, increased by almost 14%, to $24 \times 10^3 \text{ m}^3/\text{d}$, over the prior year. Fourth-quarter imports at $27 \times 10^3 \text{ m}^3/\text{d}$, increased by 24% over the same period of a year earlier, as refiners compensated for pipeline capacity constraints on the Interprovincial Pipeline System.

Crude imports into Ontario during 1986 increased to $3.2 \times 10^3 \text{ m}^3/\text{d}$ from about $1 \times 10^3 \text{ m}^3/\text{d}$ the year before. Fourth quarter imports were about $3 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL IMPORTS BY REGION



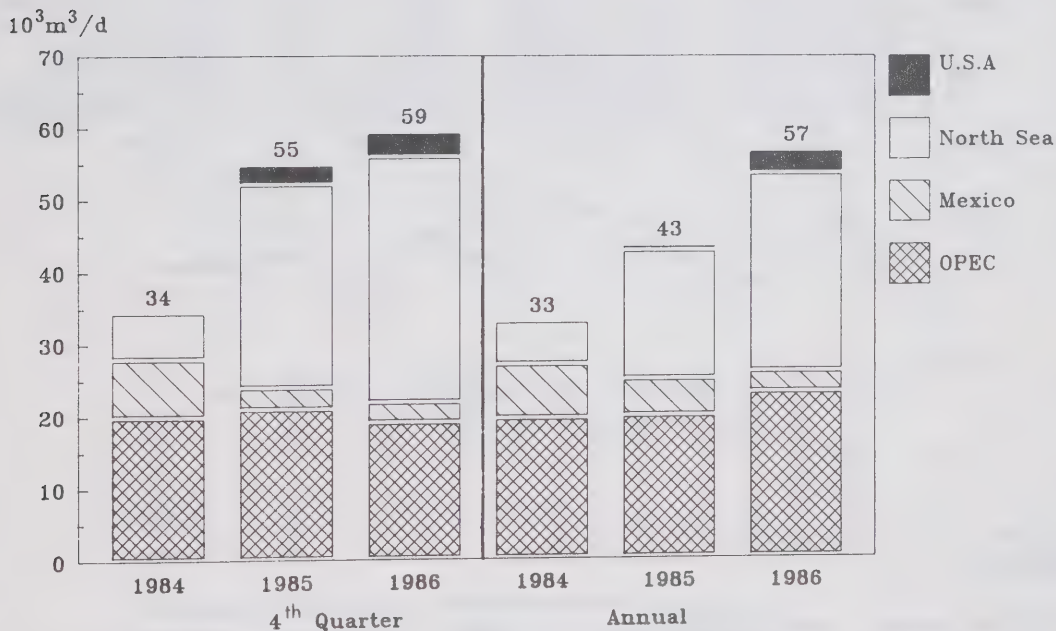
Source: National Energy Board

Sixty percent of total crude imports ($34 \times 10^3 \text{ m}^3/\text{d}$) in 1986 originated from non-OPEC sources, with the remainder ($25 \times 10^3 \text{ m}^3/\text{d}$) from OPEC countries, principally in the Middle East and Africa. This volume compares to a 55/45 non-OPEC/OPEC ratio in 1985. By the fourth quarter of 1986, non-OPEC sources supplied just over 68% ($40 \times 10^3 \text{ m}^3/\text{d}$) of total crude imports, compared with 62% ($34 \times 10^3 \text{ m}^3/\text{d}$) during the same time period in 1985.

During 1986, North Sea crudes, actively traded on the spot market to meet short-term supply needs, remained the largest supplier with a 49% ($28 \times 10^3 \text{ m}^3/\text{d}$) total market share. Mexican imports, which have steadily declined since 1985, maintained approximately the same overall market share (5%) as imports from the United States.

It appears that crude oil imports have settled into a range of $55\text{--}60 \times 10^3 \text{ m}^3/\text{d}$, basically reflecting the requirements for crude imports, including product re-export, in the present deregulated market, given current Canadian supply and pipeline constraints.

SOURCES OF CRUDE OIL IMPORTS



Source: National Energy Board

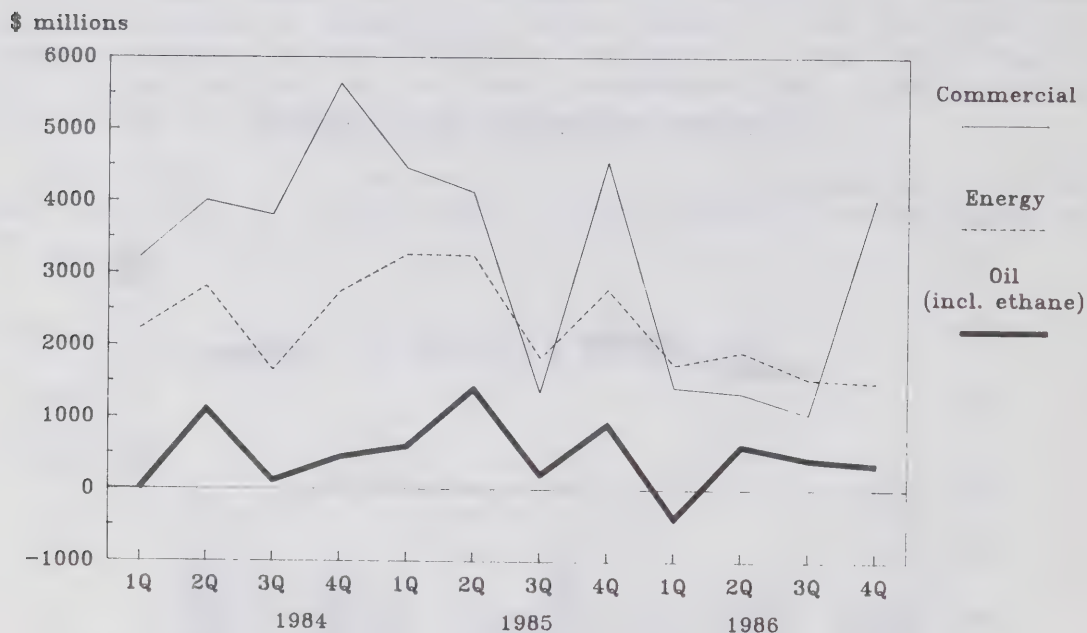
OIL TRADE BALANCE

In the fourth quarter 1986 the Canadian oil trade balance had a surplus of \$350 million, down 62% (\$565 million) from a year ago. In volumetric terms, the surplus fell to $42 \times 10^3 \text{ m}^3/\text{d}$, $8 \times 10^3 \text{ m}^3/\text{d}$ lower than last year. Much of the decline in the oil trade surplus was as a result of the 50% drop in crude oil prices during 1986.

Although the relative decline was not as great as in oil trade, the energy trade surplus fell almost \$5 billion. After reaching a high of \$11.5 billion in 1985, the surplus declined to \$6.7 billion in 1986. Canada, being a large net exporter of energy, was adversely affected by the drop in world oil and, to a lesser extent, natural gas prices.

In 1986, the oil trade surplus fell to \$1 billion, only a third of the \$3.1 billion surplus in 1985. While the bulk of the decline was due to the oil price decline, the volumetric surplus also decreased. It averaged $39 \times 10^3 \text{ m}^3/\text{d}$, down $6 \times 10^3 \text{ m}^3/\text{d}$ from the 1985 level, mainly as a result of lower petroleum product exports and higher product imports.

OIL AND ENERGY TRADE BALANCE (Quarterly)



Source: Statistics Canada

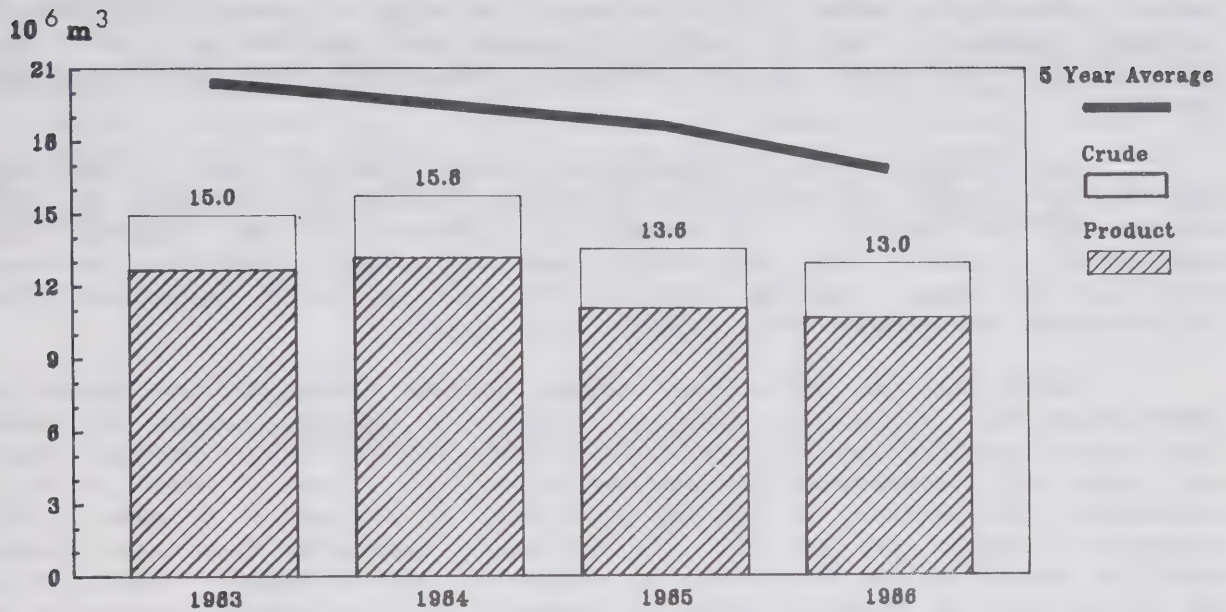
INVENTORIES

Following a traditional seasonal pattern, refiners drew down petroleum product inventories during the fourth quarter, at the rate of $8 \times 10^3 \text{ m}^3/\text{d}$, slightly faster than in the fourth quarter of 1985.

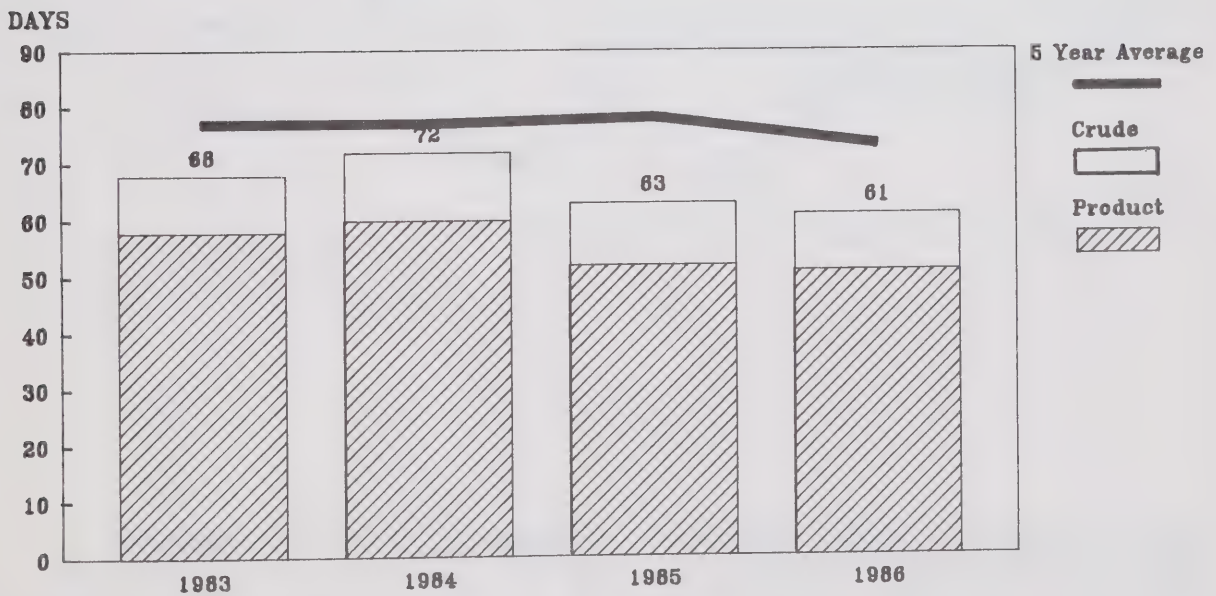
The trend to lower oil inventories continued in 1986, albeit at a slower rate, as refiners rationalized stock management in an attempt to reduce the cost of carrying inventory, and to reduce the risk associated with volatile prices. During 1986 refiners and marketers reduced product inventory by about $1.5 \times 10^3 \text{ m}^3/\text{d}$, to 10.7 million cubic metres. Since the end of 1981, product stocks have fallen nearly 40%, or about 7.3 million cubic metres.

In terms of days of forward consumption, which is generally regarded as a more relevant indicator of stock requirements, the decline in product inventories over the last five years has been less dramatic. As a result of a 10% decline in consumption, days of forward consumption declined only about 28%, from 71 days at the beginning of 1982 to 51 days in 1986.

CLOSING INVENTORIES - CANADA



DAYS OF FORWARD SUPPLY AT END OF YEAR



With respect to crude oil inventories, there was a slight draw during 1986. At the end of the year crude oil stocks stood at 2.3 million cubic metres, representing about 10 days of supply in terms of crude oil required as refinery feedstock. Days of crude oil supply have declined by 2 to 3 days over the last six years, as both feedstock requirements and inventories have fallen.

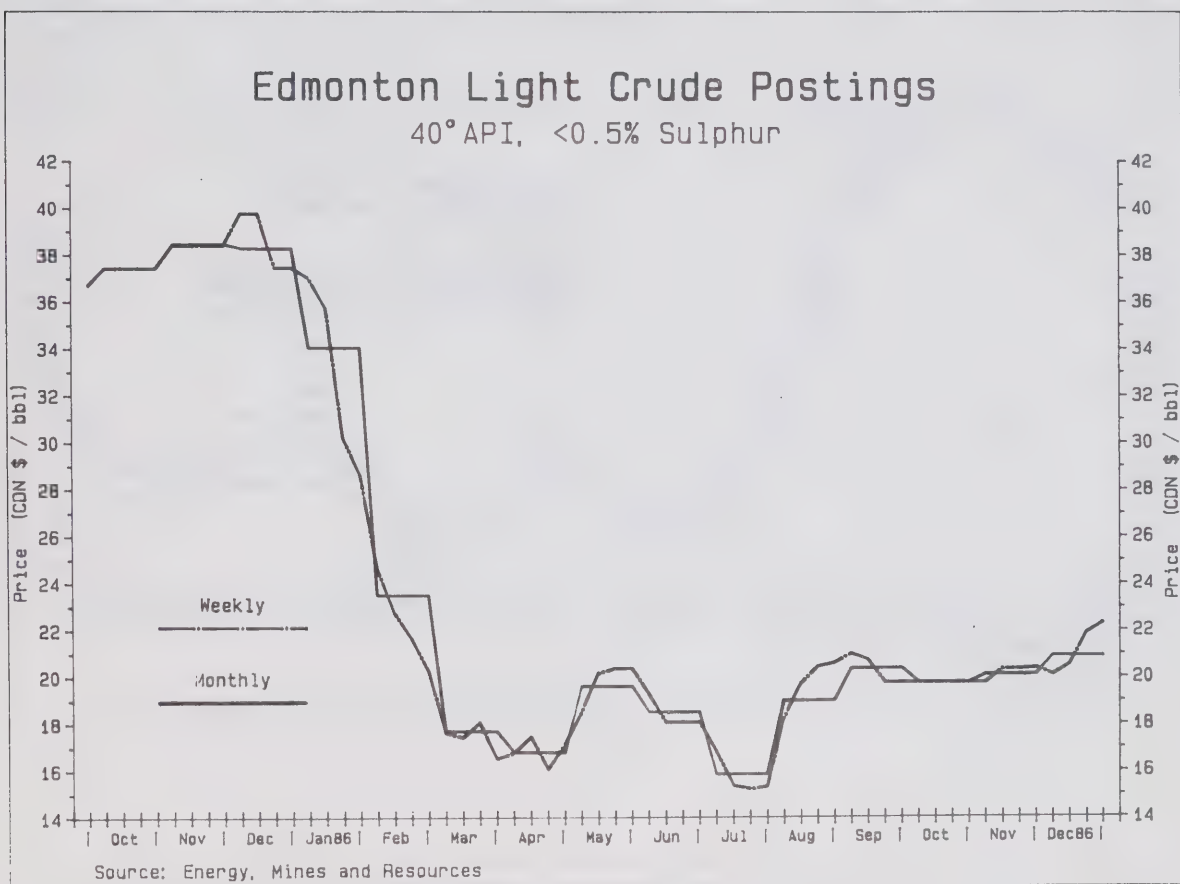
As a member of the International Energy Agency (IEA), Canada must also monitor crude and product stock levels closely and maintain at least 90 days of net exports. As Canada is currently a net exporter this requirement is met. If a worldwide crude oil supply disruption occurred, sufficient to trigger the IEA Emergency Oil Sharing System, Canada and other IEA countries would share their available oil supplies.

Under the IEA definition, stocks include crude oil and equivalent inventories held in pipeline tankage. Stocks in pipeline tankage in Canada were about 2 million cubic metres at the end of 1986. Total product stocks and crude oil inventories at refineries and in pipeline tanks stood at 15 million cubic metres, or 70 days of supply at the end of December. This compares to the IEA average of 75 days of supply (excluding government stocks, which are mainly in the United States, Japan and West Germany). Canada, being one of the few IEA countries that is presently self-sufficient in oil, is at the lower end of the range of days supply of stocks. As well, in 1986 IEA countries as a whole increased stocks (excluding government stocks) by almost 5% ($45 \times 10^3 \text{ m}^3/\text{d}$), whereas in Canada, inventories fell by over 5% ($2 \times 10^3 \text{ m}^3/\text{d}$).

PRICES

i) Crude Oil

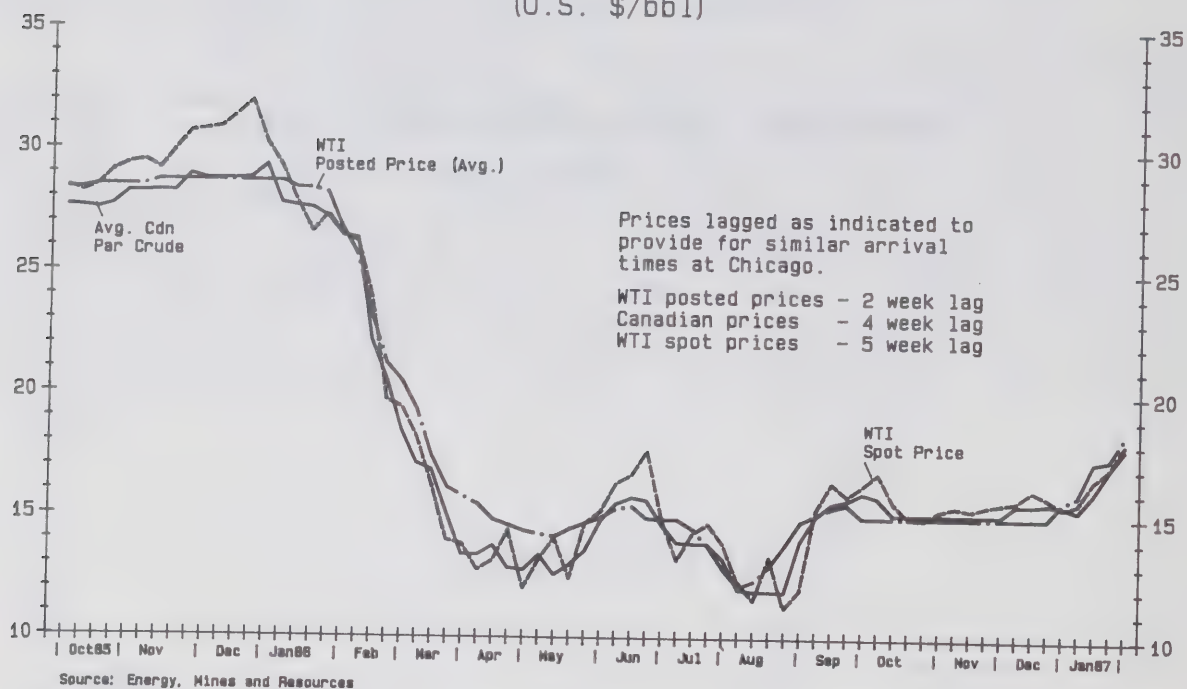
Canadian, in line with international crude oil prices, experienced a dramatic decline during the first half of 1986. Beginning the year at \$37.00/bbl, Canadian par crude prices at Edmonton (40°API, less than 0.5% sulfur) fell by mid-July to a low of \$15.20/bbl, representing a drop of 60%. Prices recovered during the third quarter to about \$19.75/bbl and remained relatively stable, around the \$20.00 level, until mid-December.



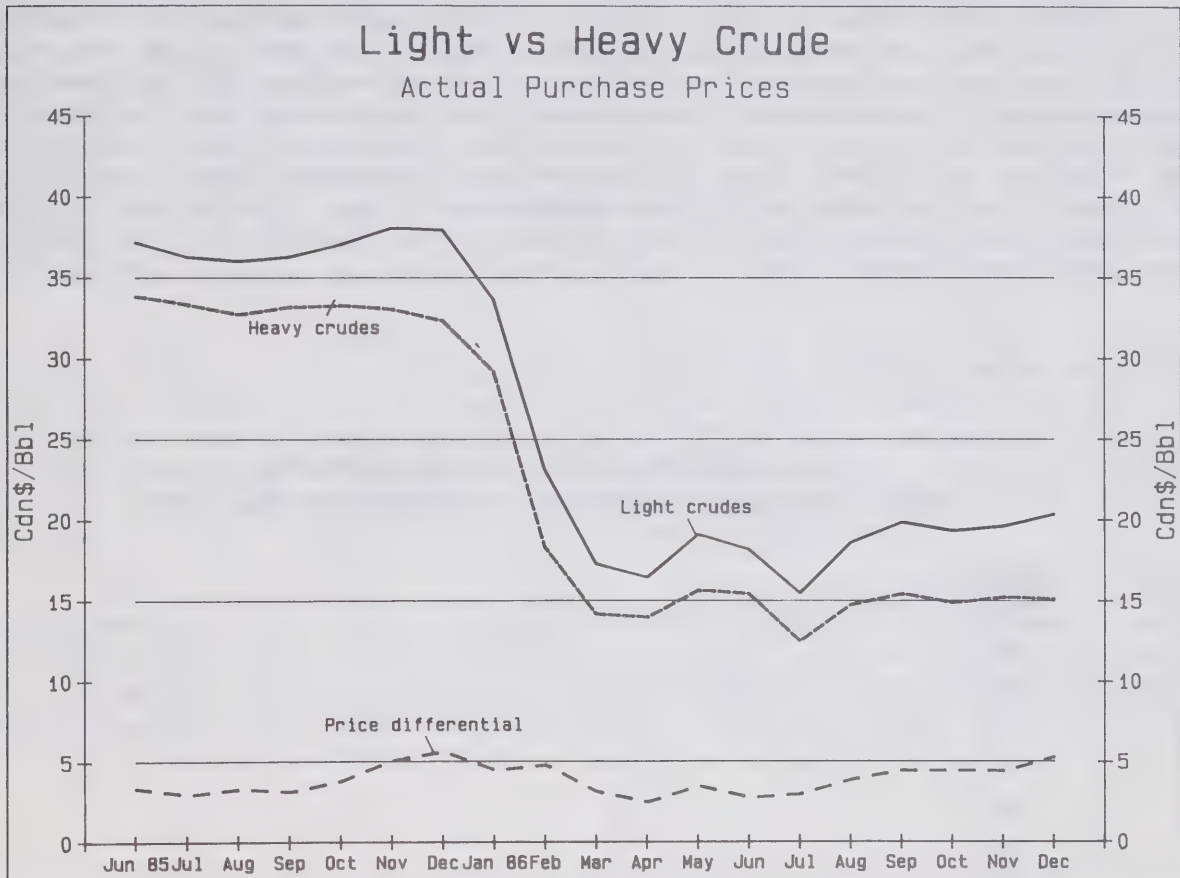
Following the OPEC agreement on production quotas in December, crude oil prices rose. Canadian prices at Edmonton reached \$22.30/bbl by the end of the year, or 60% of the price at the beginning of the year. The simple average of 1986 par crude oil prices at Edmonton, as posted by five refiners, was \$20.49/bbl.

Canadian light crude oil prices continue to follow the pattern set by international crudes, primarily the U.S. benchmark crude, West Texas Intermediate (WTI). After adjustments for delivery times to Chicago, the close relationship between posted and spot prices for WTI and Canadian par crude prices is evident.

Light Crude Oil Delivered To Chicago (U.S. \$/bbl)



The graph below compares actual prices for conventional light and heavy crude oil purchased for use in Canada at main trunk line injection stations. On average, light crude oil quality during 1986 was 38.1°API, 0.44% sulfur and heavy crude oil was 24.5°API, 2.7% sulfur. The variation in the price differential shown at the bottom of the graph is largely explained by the influence of seasonal demand factors.

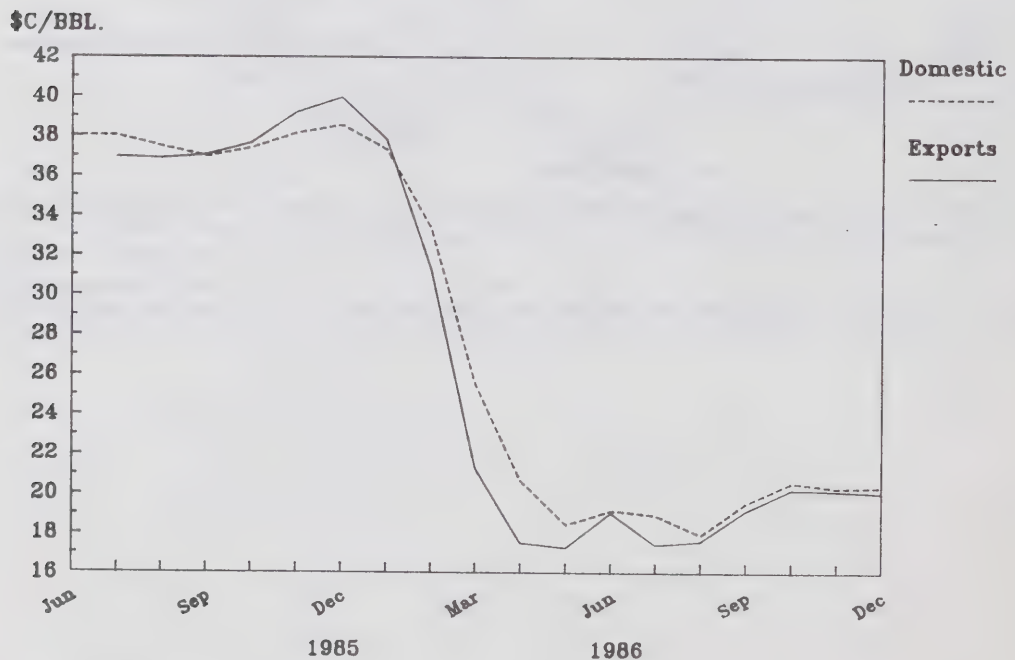


ii) Light Crude Export Values

Since mid-summer the gap between light crude export values and average Ontario refiner acquisition costs (on a quality and transportation cost-adjusted basis) has remained at \$ 0.25-0.50/bbl, primarily due to discounts into the U.S. market reflecting pipeline capacity constraints (IPL) and some Alberta supplementary sales of light crude to relatively low priced western U.S. markets (states of Montana and Washington).

Throughout 1986 the price gap was in favour of exports, and it was as wide as \$ 3-4/bbl. in March and April 1986. Much of the decline in the early part of the year reflected the delivery time advantage of the American markets, which are closer to the Alberta oil fields than are the Ontario refiners. When crude oil prices were dropping rapidly, as they were in the first quarter of 1986, the difference in delivery times contributed significantly to the widening of the export/Ontario gap. As prices levelled off in the summer the difference in delivery times between the two markets became relatively insignificant.

CANADIAN LIGHT CRUDE EXPORT AND ONTARIO DOMESTIC ACQUISITION VALUES



Source: Energy, Mines & Resources
National Energy Board

iii) Product Prices

Retail prices for petroleum products increased slightly during the fourth quarter. While average retail gasoline prices increased about 0.6¢/litre, December 1986 prices were more than 11¢/litre below the January 1986 level.

Contributing to the slight fourth quarter gasoline price increase was the flowthrough of higher crude costs experienced during August and September. Offsetting these higher costs, however, were lower federal and provincial consumption taxes (see Appendix 2). The 0.2¢/litre decrease in the federal sales tax is the largest reduction since gasoline prices began to fall during the first quarter of 1986. The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in the industrial product price index for gasoline, with a one-quarter lag. The significant price declines of the first half of 1986 are beginning to have an impact on the federal sales tax, an impact which will continue to effect the federal sales tax over the first half of 1987.

During the fourth quarter, retail diesel prices reflected only a moderate increase, with net declines in 1986 of slightly under 6¢/litre. While this decline is significantly less than that of retail gasoline, the retail diesel market represents only about 15% of total diesel sales, while more than 85% of gasoline sales are at the retail level. In the commercial and industrial class of trade, where more than 50% of diesel fuel is sold, price declines have virtually paralleled those of gasoline.

Heating oil prices were generally stable during the fourth quarter, following significant declines during the first half of 1986 (see Appendix 3). In November and early December, most major centres experienced price increases ranging from 1.2 to 2.1¢/litre in response to crude cost increases of late last summer and other market factors. Overall, prices were more than 10¢/litre lower than a year ago.

Capital Expenditures

After peaking in 1985, capital expenditures in the upstream oil and gas industry fell off sharply in 1986 (about 34%) to \$6.4 billion, based upon preliminary data.* Part of the decline can be attributed to the completion of work underway to modify and expand the synthetic crude plants at Fort McMurray in Alberta. Other important factors contributing to the drop in upstream capital expenditures were the phase-out of the Petroleum Incentive Program (PIP) which shared the cost of these expenditures with the private sectors, and the rapid decline in oil prices which occurred in the early part of 1986.

Preliminary intentions call for a continued decline in expenditures during 1987 of 16%, to about \$5.4 billion. In part, this continued decline reflects the continuing reaction to the 1986 price decline. Given the recent improvement in wellhead prices, there may be some improvement by mid-year in the level of expenditures expected for 1987.

Since the 4% growth in capital expenditures for the total economy in 1986 is expected to be repeated in 1987, the share of the upstream industry in the total would fall from 8.3% in 1985 to an expected 4.3% in 1987.

By contrast, capital expenditures in the petroleum refining industry were up 14% in 1986 and are expected to jump almost 31% in 1987, to \$0.9 billion. These capital expenditures are related to the addition of the heavy crude oil upgrader to the refinery in Regina, the need to produce refined products meeting more stringent environmental constraints, general improvements, and the modernization of existing refineries.

In contrast, capital expenditures in other energy industries, particularly electricity, showed some strength in 1986 which is expected to continue into 1987. As a result, petroleum related capital expenditures (upstream and refining) as a share of total energy capital expenditures** are expected to fall from almost 56% in 1985, to only 42% in 1987.

* Source: Statistics Canada, cat. no. 61-206 (includes both capital expenditures and major repairs).

** Includes pipelines but excludes petroleum retail distribution and coal mines.

Appendix 1

AVERAGE RETAIL PRICES, REGULAR LEADED GASOLINE, 1986

	1986 March	1986 June	1986 Sept.	1986 Dec.	Change Last 12 Months
	(Canadian cents per litre)				(%)
St. John's (Nfld.)	61.5	51.6	49.9	50.6	-18.1
Charlottetown	57.8	48.0	47.3	49.2	-15.9
Halifax	56.7	46.8	46.7	48.7	-16.2
Saint John (N.B.)	60.4	50.2	43.9	44.4	-25.8
Montreal	57.8	47.2	47.2	48.9	-16.0
Ottawa	51.5	44.9	41.6	43.2	-17.2
Toronto	48.4	40.3	38.7	40.4	-20.3
Winnipeg	51.6	45.6	45.6	45.4	-16.2
Regina	41.6	37.7	34.9	29.0	-34.5
Calgary	44.0	36.6	36.5	36.3	-22.1
Vancouver	52.8	42.7	40.0	41.0	-26.1
Canadian average	50.5	42.0	40.6	41.2	-20.3
Consumption taxes included:					
- Federal	7.1	7.5	7.5	7.3	7.4
- Provincial	7.6	7.5	7.1	7.0	-7.9

Appendix 2

CONSUMPTION TAXES ON PETROLEUM PRODUCTS,
December 1, 1986

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(per cent)		(cents per litre)			
<u>Federal Taxes</u>						
Sales *			3.77	4.12	4.24	3.48
Excise			3.5	3.5	3.5	2.0
<u>Provincial Taxes</u>						
Newfoundland*	22	26	9.2	9.2	9.2	11.7
Prince Edward Island*	20	23	8.6	8.6	8.6	10.4
Nova Scotia*	20	21	8.5	8.5	8.5	9.0
New Brunswick*	20	23	7.6	8.0	8.4	7.8
Quebec (a)		-	13.65	14.4	14.7	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba (b)	-	-	8.9	8.0	8.0	9.2
Saskatchewan	-	-	-	-	-	-
Alberta	-	-	-	-	-	-
British Columbia*	20(c)	20(c)	6.14	6.14	6.14	6.58
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	17	(d)	8.4	8.4	8.4	7.1

(a) Reduced by one third in certain remote areas and within 5 kilometres of the provincial border.

(b) Reduced by varying amounts within 60 kilometres of the border with Saskatchewan.

(c) Additional transit tax of 0.95¢/litre in Vancouver.

(d) 85% of gasoline tax.

* Changed from last quarter

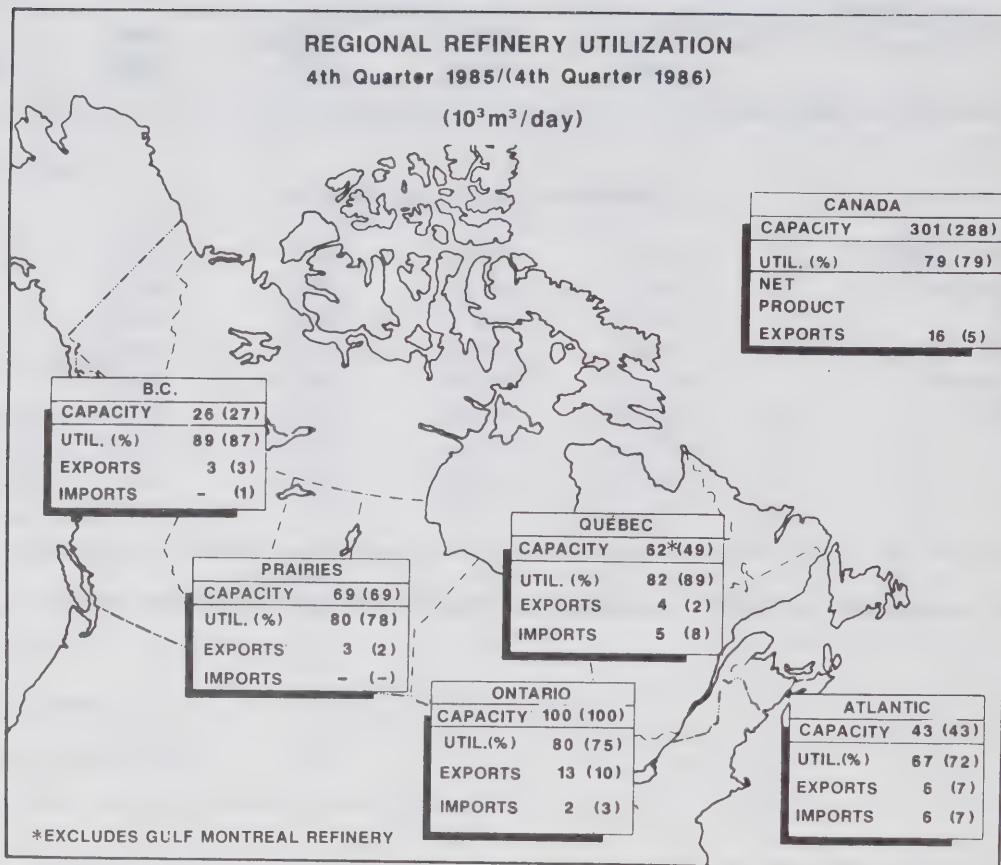
Appendix 3

Residential Furnace Oil Prices 1986

	Jan. 1986	Apr. 1986	Sept. 1986	Dec. 1986	Change last 12 Months
	(Canadian cents per litre)				(%)
St. John's (Nfld.)	42.5	36.2	30.7	32.3	-20.6
Charlottetown	39.0	32.7	30.7	32.3	-16.8
Halifax	38.3	32.3	28.3	29.9	-21.9
Saint John (N.B.)	40.4	34.9	31.4	33.0	-15.2
Quebec City*	40.1	32.2	25.3	26.9	-30.1
Montreal*	38.4	31.9	24.3	25.0	-32.6
Ottawa	40.1	35.3	28.5	27.5	-29.5
Toronto	39.6	34.2	28.3	26.6	-30.7

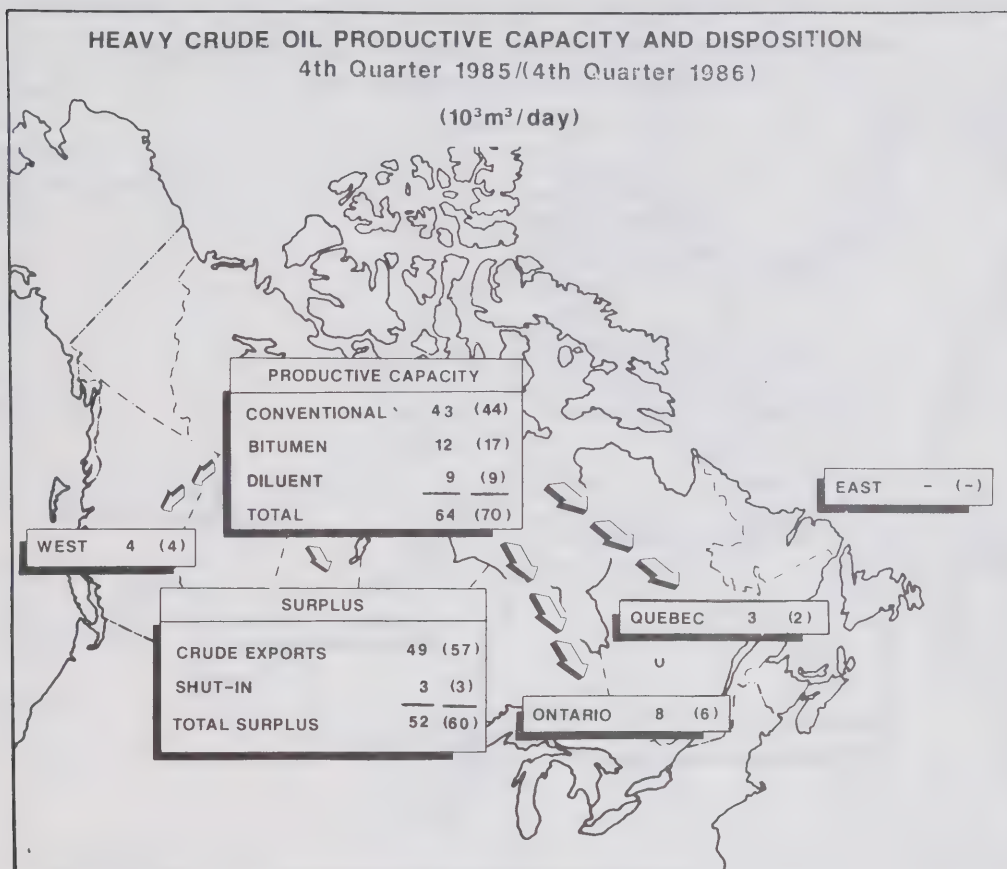
* provincial sales tax (9%) included in September and December prices

Appendix 4



Source: Statistics Canada

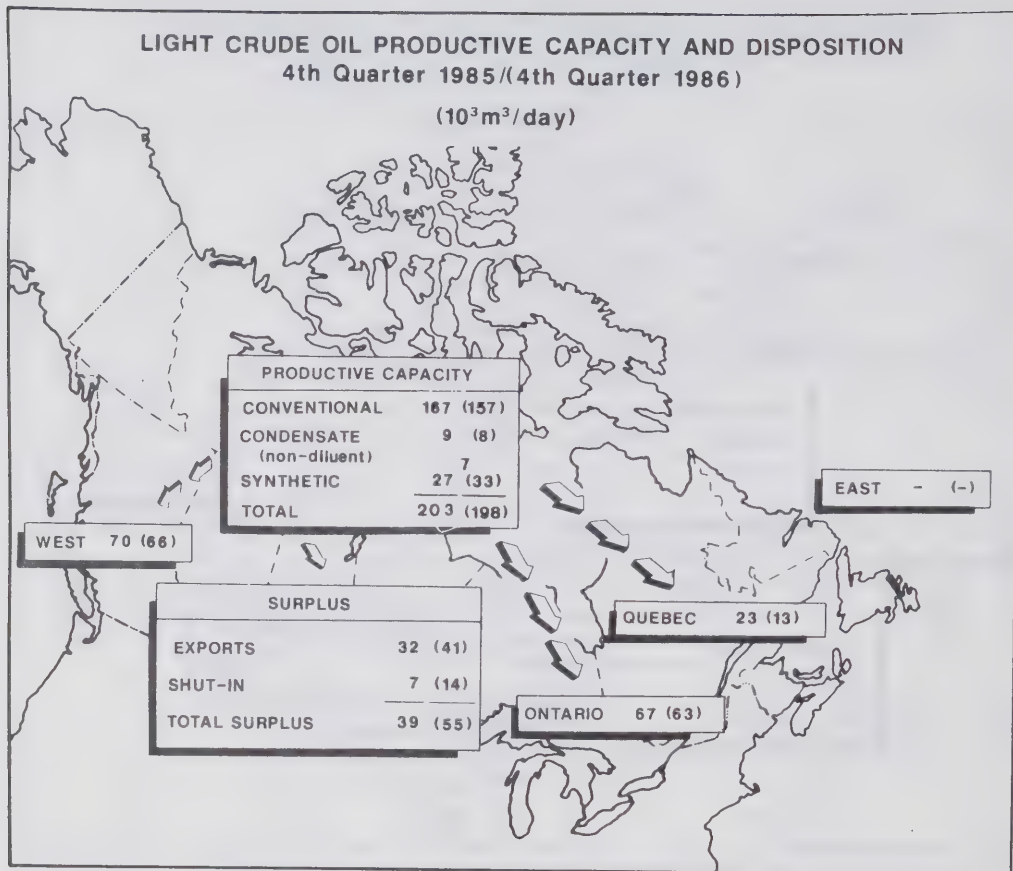
Appendix 5



Source: National Energy Board

Note: Differential between productive capacity and disposition attributed to stock change.

Appendix 6



Source: National Energy Board

Note: Differential between productive capacity and disposition attributed to stock change.

APPENDIX 7
AVAILABLE SUPPLY OF WESTERN CANADIAN CRUDE
OIL AND EQUIVALENT

	<u>YEAR</u>			
	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
<u>Light/Medium and</u> <u>Equivalent crudes</u>	----- (10 ³ m ³ /d) -----			
Alberta	137.0	146.6	138.2	126.0
B.C.	5.7	5.8	5.4	5.5
Manitoba	2.0	2.1	2.2	2.3
Saskatchewan	7.9	9.1	10.2	10.7
Other	<u>0.7</u>	<u>0.6</u>	<u>2.9</u>	<u>3.8</u>
	153.3	164.2	158.9	148.3
<u>Synthetic</u>				
Suncor	7.6	7.6	5.8	8.7
Suncrude	<u>17.8</u>	<u>13.5</u>	<u>20.3</u>	<u>20.5</u>
	25.4	21.1	26.1	29.2
<u>Pentanes Plus</u>	<u>9.9</u>	<u>8.7</u>	<u>10.0</u>	<u>7.6</u>
Total Light	<u>188.6</u>	<u>194.0</u>	<u>195.0</u>	<u>185.1</u>
<u>Heavy Crude Oil</u>				
<u>Alberta</u>				
Crude	18.9	22.5	26.3	33.8
Diluent	<u>2.9</u>	<u>3.1</u>	<u>3.3</u>	<u>5.9</u>
	21.8	25.6	29.6	39.7
<u>Saskatchewan</u>				
Crude	18.1	20.3	21.2	21.0
Diluent	<u>2.6</u>	<u>3.3</u>	<u>3.0</u>	<u>2.7</u>
	20.7	23.6	24.2	23.7
Total Heavy	<u>42.5</u>	<u>49.2</u>	<u>53.8</u>	<u>63.4</u>
<u>Shut-In</u>				
Light	8.1	1.0	9.8	12.6
Heavy	<u>0.2</u>	<u>-</u>	<u>2.3</u>	<u>4.0</u>
	8.3	1.0	12.1	16.6
<u>PRODUCIBILITY</u>	<u>239.4</u>	<u>244.2</u>	<u>260.9</u>	<u>265.1</u>

Source: National Energy Board

APPENDIX 8
DOMESTIC CRUDE OIL DISPOSITION

	<u>YEAR</u>			
	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
<u>Light/Medium Crude Oil and Equivalent</u>	-----($10^3\text{m}^3/\text{d}$)-----			
<u>Supply</u>				
Production	188.6	194.0	195.0	185.1
Pipeline Inv. (Draw)/Build	<u>2.1</u>	<u>0.2</u>	<u>(0.9)</u>	<u>(0.2)</u>
Net Supply	186.5	193.8	195.9	185.3
<u>Demand</u>				
Atlantic	7.4	8.7	2.3	0.2
Quebec	32.3	29.1	21.5	12.8
Ontario	70.6	71.9	67.6	62.2
Prairies	45.9	48.5	48.5	48.1
B.C.	<u>21.7</u>	<u>22.4</u>	<u>22.6</u>	<u>20.8</u>
Domestic Demand	177.9	180.6	162.5	144.1
Exports	<u>8.6</u>	<u>13.2</u>	<u>33.4</u>	<u>41.2</u>
Total Demand	<u>186.5</u>	<u>193.8</u>	<u>195.9</u>	<u>185.3</u>
<u>Heavy Crude Oil Supply</u>				
Production	42.5	49.2	53.8	63.4
Pipeline Inv. (Draw)/Build	<u>(3.1)</u>	<u>(0.3)</u>	<u>(2.9)</u>	<u>(4.2)</u>
Net Supply	45.6	49.5	56.7	67.6
<u>Demand</u>				
Atlantic	-	0.2	0.2	0.1
Quebec	1.3	2.1	1.7	2.4
Ontario	5.4	7.3	8.5	8.3
Prairies	4.6	3.9	4.7	4.5
B.C.	-	-	-	-
Domestic Demand	11.3	13.5	15.1	15.3
Export	<u>34.3</u>	<u>36.0</u>	<u>41.6</u>	<u>52.3</u>
Total Demand	<u>45.6</u>	<u>49.5</u>	<u>56.7</u>	<u>67.6</u>

Source: National Energy Board

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as <u>condensate</u> . A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity	Also referred to as <u>producibility</u> . The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.
Shut-in capacity	The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.
Synthetic crude oil	Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.



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The Canadian Oil Market

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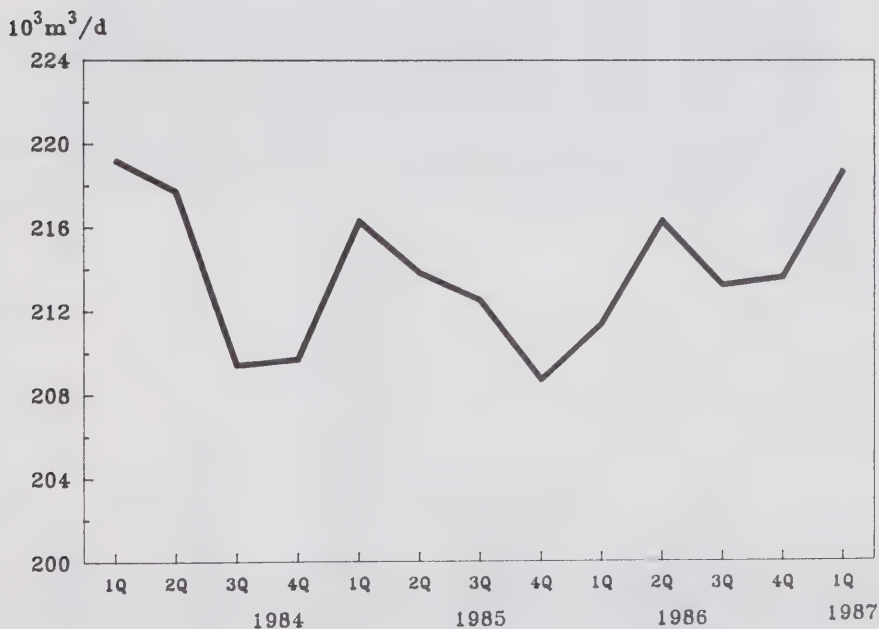
THE CANADIAN OIL MARKET

1. DOMESTIC DEMAND

Total petroleum product demand in Canada (seasonally adjusted) rose sharply during the first quarter of 1987 to $219 \times 10^3 \text{ m}^3/\text{d}$. Demand increased in line with the performance of the economy, and appears to be maintaining a trend started after the demand trough in the fourth quarter of 1985. This upswing in petroleum demand coincides roughly with the drop in crude oil prices early in 1986. The apparent second-and third-quarter 1986 anomaly in this upswing may have been caused by final consumers building inventories during the second quarter when product prices fell in line with crude oil prices. Inventories were then drawn down to normal operating levels during the third quarter of 1986.

The first-quarter demand represents an increase of almost 3% over 1986 as a whole, and the previous quarter. The growth rate would have been somewhat higher, if abnormally warm temperatures in eastern and central Canada had not reduced heating oil demand.

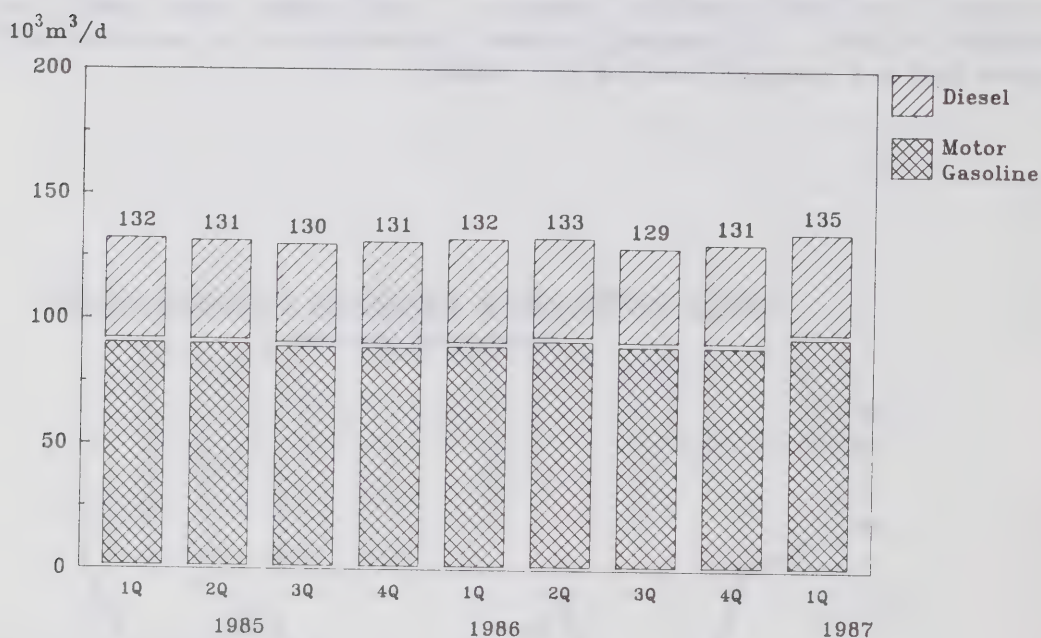
TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada

Demand for motor gasoline and diesel fuel, (seasonally adjusted) rose 3.7% and 2.2% respectively, after having remained relatively stable for the past two years. Both heavy fuel oil (up almost 6%) and all other products (4%) exhibited strong rates of growth. In the case of heavy oil, there appears to have been an element of fuel switching by industrial consumers with dual-fired capabilities, which accounted for some of the growth. In the case of other products, the strong upswing in petrochemical demand in line with the strength of the economy was an important factor.

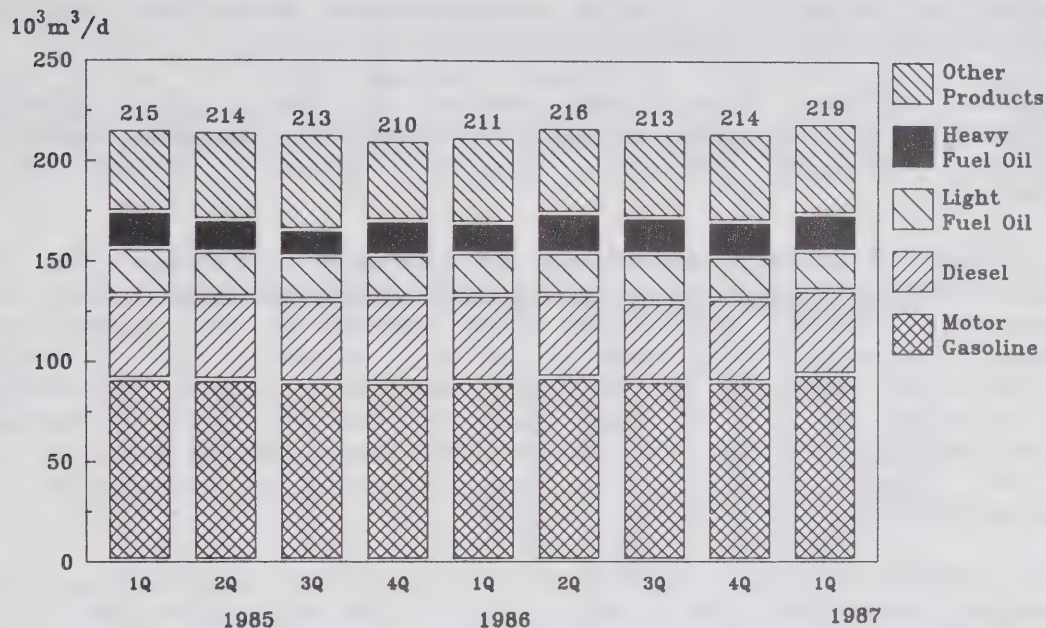
TRANSPORTATION FUEL CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada.

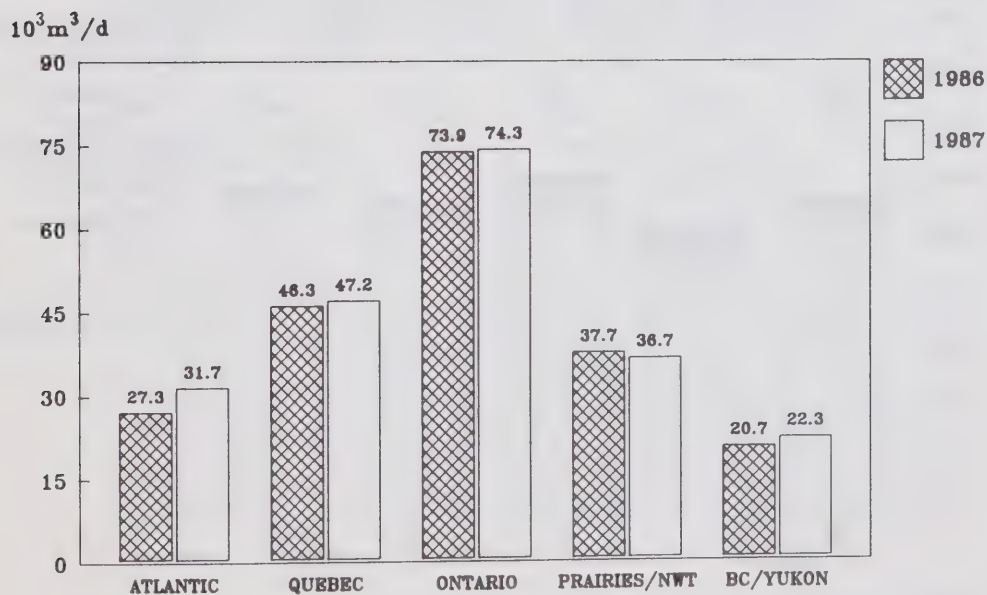
On a regional basis, growth in the Atlantic region was particularly strong (16%), reflecting additional heavy fuel used to generate electricity because of unusually low water levels, and a reduction in electrical power available from other regions. Growth in British Columbia was also strong (almost 8%), reflecting stronger demand in the forest products industries. Ontario and Quebec portrayed relatively modest rates of growth, while in the Prairies, consumption fell almost 3% as a result of reduced activity in the petroleum and agriculture industries.

PETROLEUM PRODUCT CONSUMPTION BY PRODUCT (Seasonally Adjusted)



Source: Statistics Canada.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (First Quarter)



Source: Statistics Canada

2. REFINERY UTILIZATION*

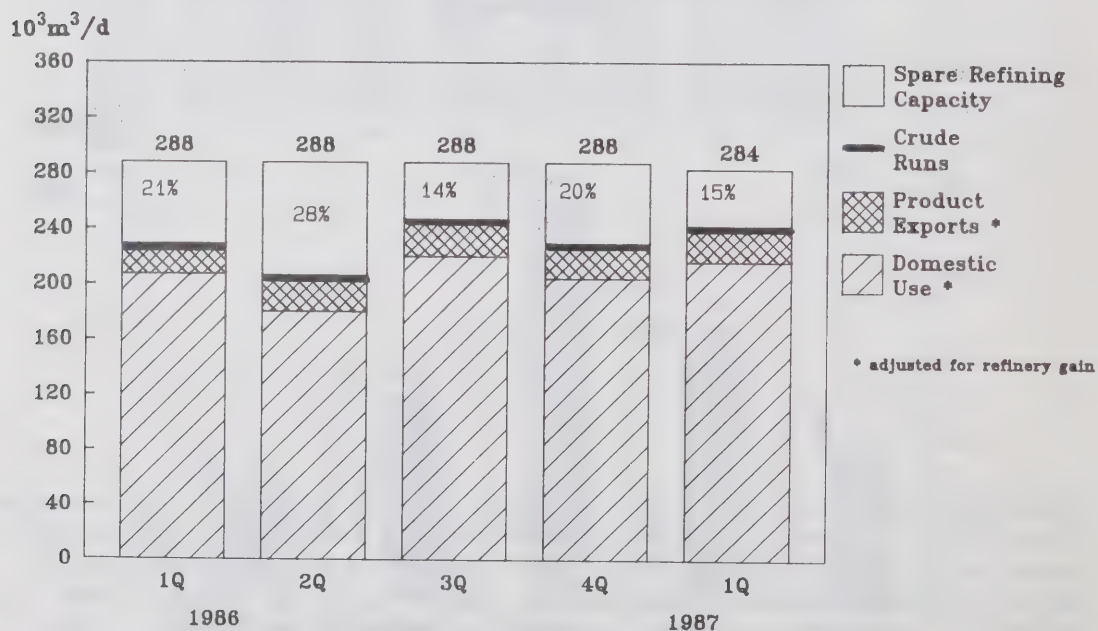
During the first quarter Canadian refiners increased crude and equivalent run to stills by $12 \times 10^3 \text{m}^3/\text{d}$, compared with the first quarter of 1986. More than half of the increase reflected the rise in domestic product consumption, while a $4 \times 10^3 \text{m}^3/\text{d}$ improvement in net product exports and a greater inventory build accounted for the balance.

Effective refining capacity was reduced by about 1.5% ($5 \times 10^3 \text{m}^3/\text{d}$) at the beginning of the year, mainly reflecting some marginal reductions in Ontario. Effective national capacity currently stands at about $284 \times 10^3 \text{m}^3/\text{d}$.

As a result of capacity reductions and increased throughput, the refinery utilization rate rose to 85%, an increase of 6 percentage points from the year-earlier period. Utilization rates improved in all regions, with the greatest improvement registered in Ontario. A combination of the decline in refining capacity ($5 \times 10^3 \text{m}^3/\text{d}$) and an increase in throughput ($8.6 \times 10^3 \text{m}^3/\text{d}$) led to a sharp jump in Ontario refinery utilization during the first quarter. It reached 92%, versus 79% in the first quarter of 1986. Much of the rise in usage reflected an increase in product exports and a greater inventory build.

With respect to the other regions, rates of utilization increased slightly, and ranged from a low of 75% in the Atlantic to 93% in Quebec. A more detailed review of regional refinery utilization and product trade is outlined in Appendix IV.

REFINERY UTILIZATION



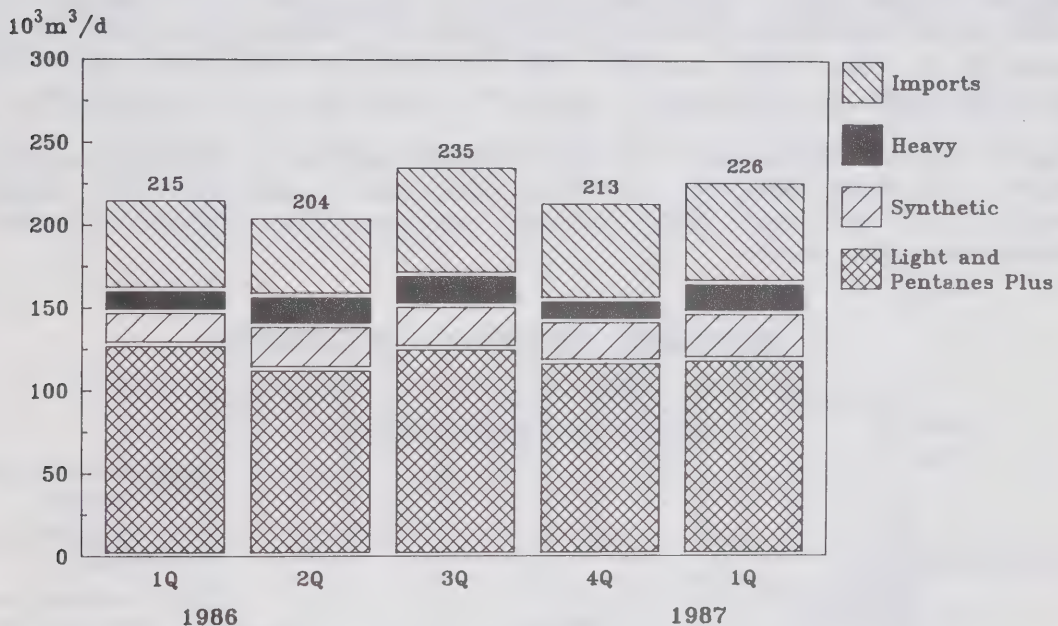
Source: Statistics Canada

* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

3. CRUDE OIL REQUIREMENTS

During the first quarter of 1987, total crude oil received at Canadian refineries rose by more than $11 \text{ } 10^3\text{m}^3/\text{d}$ (5%) from the same period a year earlier. More than half of the increase ($7 \text{ } 10^3\text{m}^3/\text{d}$) was imported. The use of Canadian heavy crude rose sharply during the quarter by $5 \text{ } 10^3\text{m}^3/\text{d}$ (39%), to almost $18 \text{ } 10^3\text{m}^3/\text{d}$, as refiners replaced light crude oil with heavier feedstocks. As a result, receipts of Canadian light crude oil and equivalent fell marginally, but still represented almost two thirds of all crude received at Canadian refineries.

CRUDE OIL RECEIVED AT CANADIAN REFINERIES



Source: Refiners' Submissions
to the National Energy Board

4. MONTREAL CRUDE USE

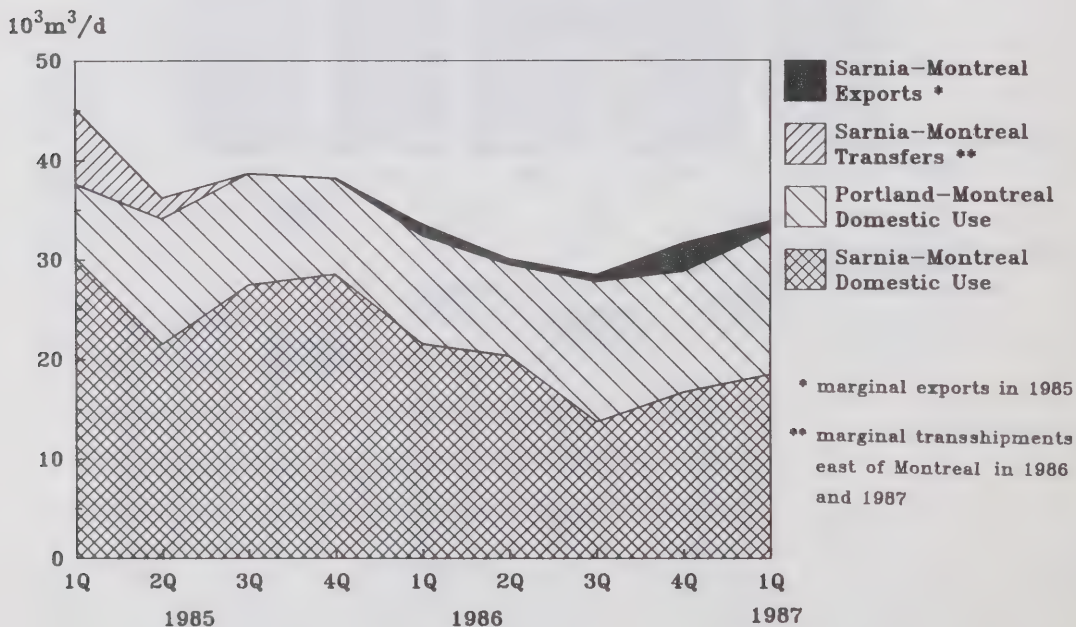
Deliveries of crude oil and equivalent to Montreal refiners were up marginally in the first quarter, to more than 34 $10^3\text{m}^3/\text{d}$, compared with the year earlier. Domestic deliveries, via the Sarnia-Montreal Pipeline, declined 3 $10^3\text{m}^3/\text{d}$, to 20 $10^3\text{m}^3/\text{d}$, while imports through the Portland pipeline system increased by the same amount, to 14 $10^3\text{m}^3/\text{d}$.

The decline in domestic crude receipts, reflected continued Interprovincial Pipeline (IPL) capacity constraints, including a temporary loss of capacity during start up of IPL's Phase II expansion in February and March. Domestic light crude deliveries fell almost 20%, to 12.5 $10^3\text{m}^3/\text{d}$, however domestic heavy crude use was up 20% to 4 $10^3\text{m}^3/\text{d}$.

The remaining IPL deliveries of 3.5 $10^3\text{m}^3/\text{d}$ were made up of other refinery feedstocks, including partially processed oil from Ontario, and heavy crude exports. Several spot sales of heavy crude out of Montreal occurred in the first quarter (see Exports and Imports). The volume of exported crude is estimated to be in the range of 1 to 1.5 $10^3\text{m}^3/\text{d}$.

Crude imports, which were at the highest quarterly level in nearly three years, reflected domestic pipeline constraints and the very competitive position of offshore light crude, compared with Canadian light crude values over the period.

MONTREAL CRUDE OIL DELIVERIES



Source: Energy, Mines and Resources

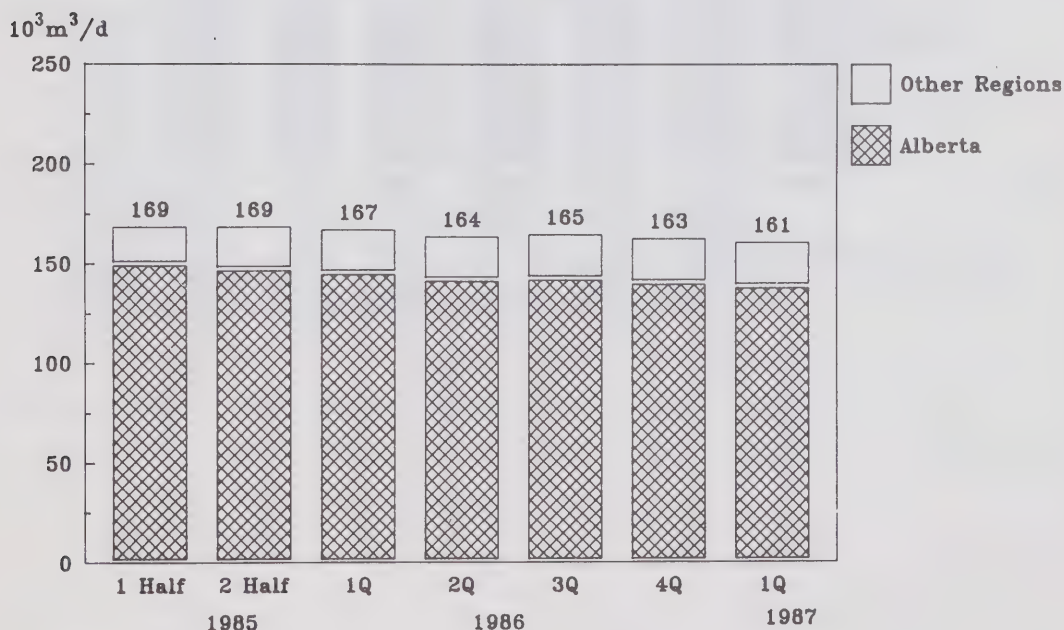
5. AVAILABLE SUPPLY

In the spring of 1987, a committee consisting of the Alberta Energy Resources Conservation Board (AERCB) and crude oil producers completed a review of light and medium crude oil productive capacity in Alberta. As a result of this study, the AERCB increased its estimate of Alberta light and medium conventional crude oil for 1987. It also revised productive capacity, on a retroactive basis, to June 1986.

Alberta conventional light and medium crude oil productive capacity in the first quarter of 1987 has, therefore, been adjusted upwards, by $6.8 \times 10^3 \text{ m}^3/\text{d}$, to over $138 \times 10^3 \text{ m}^3/\text{d}$. This revision, along with the upward adjustments of, on average, about $6 \times 10^3 \text{ m}^3/\text{d}$, for the period June to December 1986, reduces the rate of decline in Alberta light crude capacity, which was discussed in previous reports. The capacity decline (revised) between the first quarter of 1986 and the first quarter of 1987 was $6.6 \times 10^3 \text{ m}^3/\text{d}$, or about 5%. Including other regions, where capacity rose slightly, total Canadian conventional light crude capacity fell $5.5 \times 10^3 \text{ m}^3/\text{d}$, to $161 \times 10^3 \text{ m}^3/\text{d}$, from a year earlier.

A more optimistic price outlook, higher actual reserve additions and a forecast increase in drilling activity all contributed to the AERCB capacity revision.

CONVENTIONAL LIGHT AND MEDIUM CRUDE OIL PRODUCTIVE CAPACITY

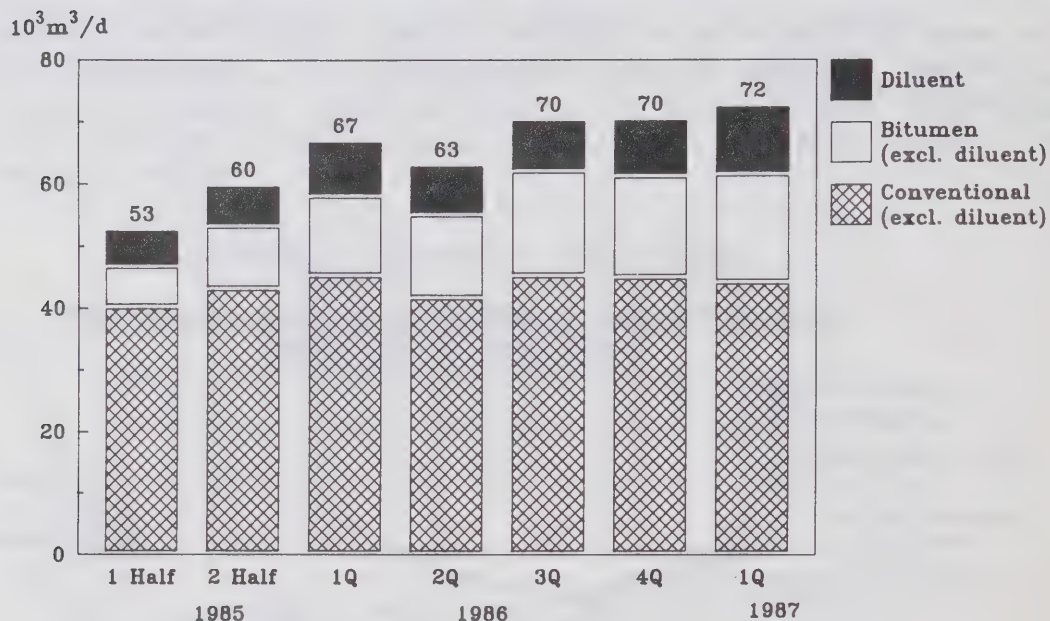


Source: National Energy Board

Mainly as a result of an increase in unblended bitumen capacity, unblended heavy crude oil capacity rose about $3 \times 10^3 \text{ m}^3/\text{d}$, to almost $63 \times 10^3 \text{ m}^3/\text{d}$, in the first quarter of 1987, from the year earlier. When diluent requirements are added, to make the heavy crude transportable by pipeline, total blended heavy crude capacity was at $72 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter, an increase of more than $5 \times 10^3 \text{ m}^3/\text{d}$ from 1986. Over the last year, conventional heavy crude capacity has been declining marginally each quarter, while blended bitumen supply has been increasing at a rate of 1 to $1.5 \times 10^3 \text{ m}^3/\text{d}$ per quarter.

Total conventional crude oil capacity (excluding pentanes plus and synthetic crude production) was unchanged, at $233 \times 10^3 \text{ m}^3/\text{d}$, in the first quarter of 1987 versus the first quarter 1986, as the decline in light crude capacity was offset by a similar growth in heavy crude supply.

HEAVY CRUDE PRODUCTIVE CAPACITY

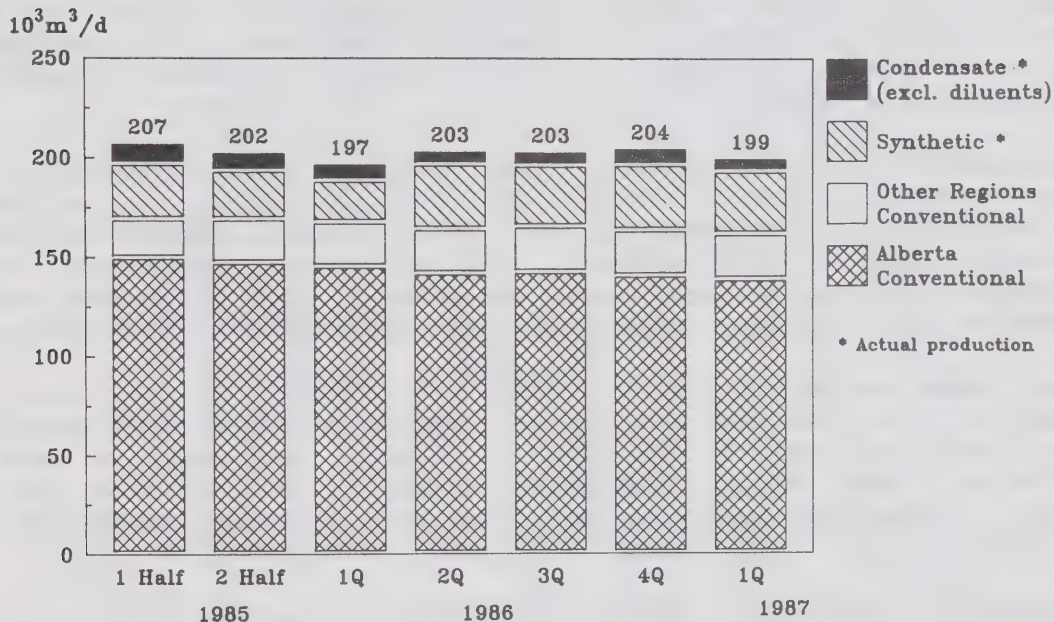


Source: National Energy Board

Synthetic crude production was more than $31 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter, up about 50% from the 1986 period. Much of the increase occurred at the Syncrude operation. The plant was on a maintenance program during much of the first quarter of 1986, however 1987 maintenance did not begin until late March.

Condensate production remained constant, at about $18 \times 10^3 \text{ m}^3/\text{d}$, from the year before. However, diluent requirements rose by more than $2 \times 10^3 \text{ m}^3/\text{d}$, to $11 \times 10^3 \text{ m}^3/\text{d}$ (excluding $0.8 \times 10^3 \text{ m}^3/\text{d}$ of recycled diluent), leaving about $7 \times 10^3 \text{ m}^3/\text{d}$ available for refinery feedstock and other purposes.

TOTAL LIGHT CRUDE OIL AND EQUIVALENT AVAILABLE SUPPLY



Source: National Energy Board

6. PRODUCTION

In February, 1987 Interprovincial Pipeline (IPL) completed Phase II of its expansion of facilities. While some incremental pipeline capacity had been provided earlier in the upgrading and construction, another $10 \times 10^3 \text{ m}^3/\text{d}$ of capacity was added upon completion of Phase II. Phase II expansion also involved the switchover, of lines two and three, whereby heavy crudes are shipped in line three and light crudes move in line two. During the period of pipeline switchover IPL capacity was temporarily reduced. Until Phase III is completed in the early fall, it is still possible that IPL could experience some periodic capacity constraints.

The IPL line switchover, and increased movements of heavy crude oil contributed to IPL light crude transportation capacity constraints during the first quarter. As well, as has been the case in the past, light crude demand by refiners declined somewhat towards the end of the quarter in anticipation of the April-May refinery maintenance period. Light crude and equivalent production fell about $3 \times 10^3 \text{ m}^3/\text{d}$, to $178 \times 10^3 \text{ m}^3/\text{d}$, from the year earlier. However, in part because synthetic output increased by more than $10 \times 10^3 \text{ m}^3/\text{d}$ and is not subject to prorationing controls, production of Alberta light conventional crude declined $12 \times 10^3 \text{ m}^3/\text{d}$.

Shut-in light crude capacity increased $6 \times 10^3 \text{ m}^3/\text{d}$, to $21 \times 10^3 \text{ m}^3/\text{d}$, from the first quarter of 1986, but was only marginally higher than in the fourth quarter of 1986. On a year-over-year basis, the increase in shut-in is totally attributable to the retroactive revision in light crude capacity by the AERCB.

Supplementary sales of Alberta light crude oil were $10 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter, a drop of $2 \times 10^3 \text{ m}^3/\text{d}$. The IPL system was at capacity for most of the period, however, some excess capacity existed on the Trans Mountain and Rangeland systems. In March the restrictions on the destination of supplementary sales was lifted, allowing Canadian refiners access to supplementary crude for the last three months of the program.

Heavy crude production reached almost $71 \times 10^3 \text{ m}^3/\text{d}$ in the first three months of 1987, an increase of $10 \times 10^3 \text{ m}^3/\text{d}$ from the first quarter of 1986. Shut-in declined from about $7 \times 10^3 \text{ m}^3/\text{d}$ last year, to just over $1 \times 10^3 \text{ m}^3/\text{d}$. Much of the additional production was exported, including sales to Europe and Southeast Asia. As well, Canadian demand rose about $4 \times 10^3 \text{ m}^3/\text{d}$.

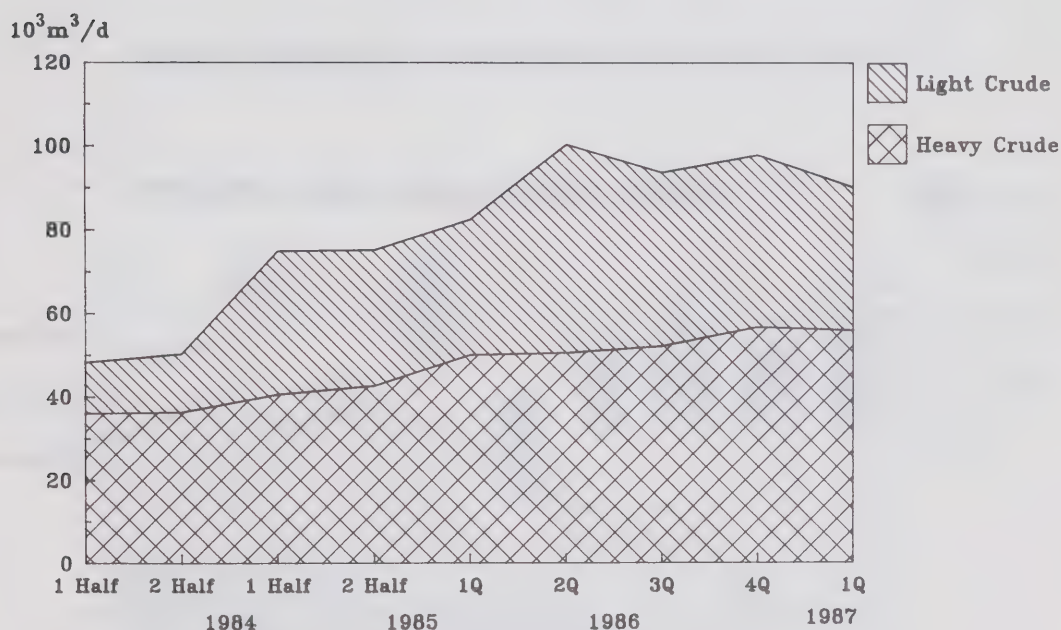
It should be noted that heavy crude production in the first quarter of 1986 was curtailed, generally reflecting price uncertainties at that time, and buyers propensity to draw down stocks until the oil price drop had bottomed.

7. EXPORTS AND IMPORTS

7.1 Crude Oil Exports

Crude oil exports declined, by $8 \times 10^3 \text{ m}^3/\text{d}$, from the fourth quarter of 1986, to $90 \times 10^3 \text{ m}^3/\text{d}$ in the first three months of 1987. Most of the decline was in the light crude category, which dropped $7 \times 10^3 \text{ m}^3/\text{d}$, to $34 \times 10^3 \text{ m}^3/\text{d}$, while heavy crude exports dropped marginally, to $55 \times 10^3 \text{ m}^3/\text{d}$. However, exports were about 10% higher than in the first quarter of 1986.

CRUDE OIL EXPORTS



Source: National Energy Board

Light crude exports declined for several reasons, including: continued pipeline constraints, which were exacerbated by the switchover of lines on the IPL system; heavy crude exports via the Trans Mountain Pipeline, which displaced light crude movements by a greater than 1:1 ratio because of higher viscosity of the heavy crude; and the removal of export-only destination restrictions on supplementary sales of Alberta light crude in March, which shifted some of these sales to the domestic market.

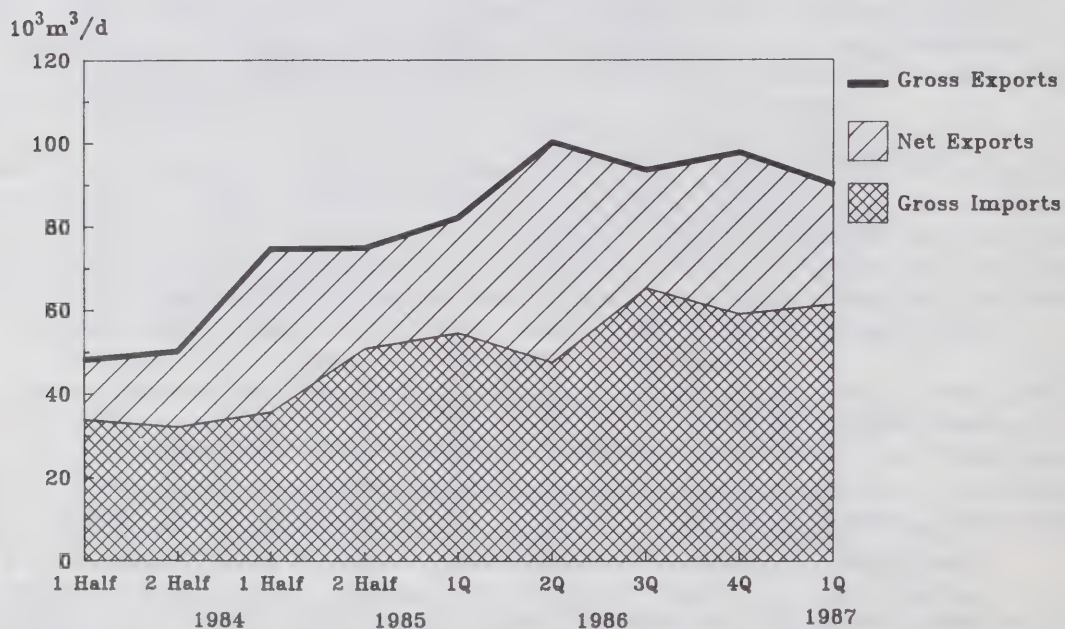
Since the beginning of the year, exports by tanker of heavy crude from the ports of Vancouver and Montreal have increased significantly as producers look for market expansion and diversification. It is estimated that about $3 \times 10^3 \text{ m}^3/\text{d}$ of heavy crude has been exported from these two ports in the first three months of this year. Most sales have been to refiners in Washington, and the U.S. Gulf and east coasts, although sales have also been made in Europe and Asia.

7.2 Crude Oil Imports

Gross crude oil imports in the first quarter were approximately $62 \times 10^3 \text{ m}^3/\text{d}$, reflecting 2.2 million cubic metres ($70 \times 10^3 \text{ m}^3/\text{d}$) of imports in the month of January. Imports were slightly above the second half of 1986 level of $59 \times 10^3 \text{ m}^3/\text{d}$, and $5 \times 10^3 \text{ m}^3/\text{d}$ greater than the 1986 annual average.

Even though crude oil imports were up, compared with the first quarter of 1986, Canadian reliance* on oil imports remained at about 27% of domestic petroleum product sales. Much of the increase in crude imports was offset by an increase in net petroleum product exports.

CRUDE OIL EXPORTS AND IMPORTS



Source: National Energy Board

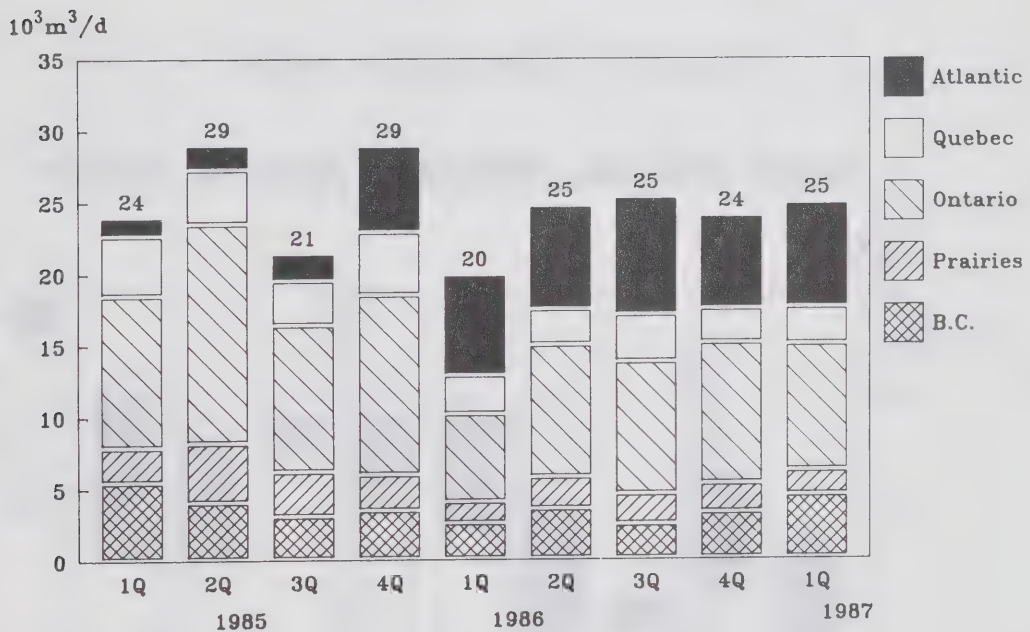
* Crude oil imports less net refined oil product exports.

7.3 Petroleum Products Trade

The trade surplus in oil products improved by almost $5 \times 10^3 \text{m}^3/\text{d}$ in the first quarter, from the same period a year earlier, as product exports increased to $25 \times 10^3 \text{m}^3/\text{d}$, while imports remained the same, at $20 \times 10^3 \text{m}^3/\text{d}$. Much of the increase in exports reflects a return to more normal export levels in 1987, after the sharp drop in the first quarter of 1986.

On a regional basis, the bulk of the increase in product exports occurred in Ontario and British Columbia. Exports from Ontario at $8.7 \times 10^3 \text{m}^3/\text{d}$, were slightly below the average level in 1986, but $2.5 \times 10^3 \text{m}^3/\text{d}$ higher than in the first quarter of 1986. In British Columbia exports climbed $1.8 \times 10^3 \text{m}^3/\text{d}$, or 75%.

GROSS REGIONAL PETROLEUM PRODUCT EXPORTS

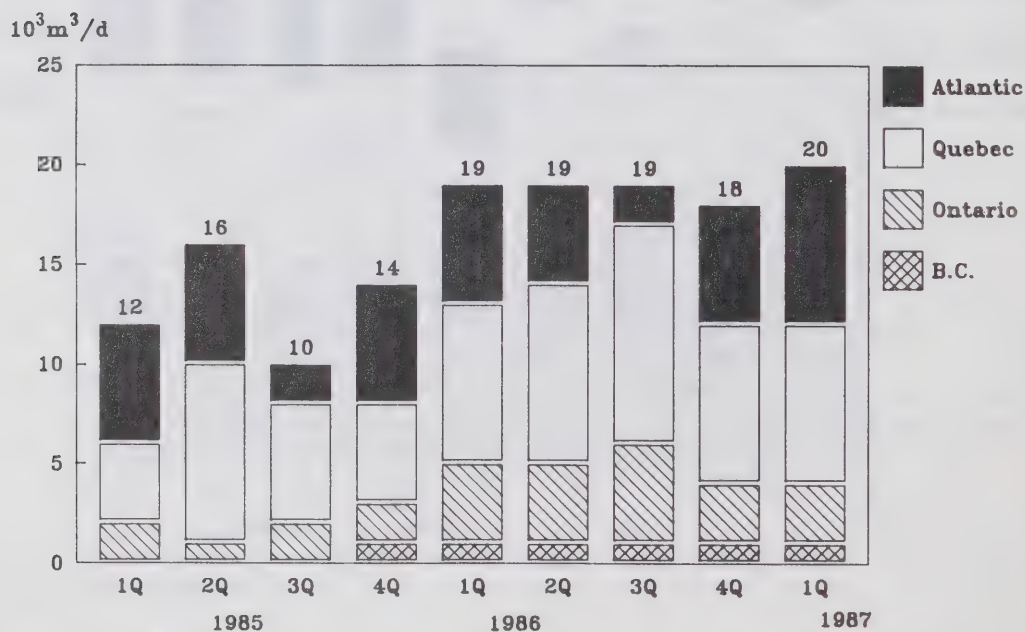


Source: Statistics Canada

As has been the case in the past, over 95% of product imports have occurred in Ontario and Eastern Canada, with generally 40 to 50 % of all imports being made into Quebec. Petroleum product imports averaged about $13 \times 10^3 \text{ m}^3/\text{d}$ in 1985, before rising to $19 \times 10^3 \text{ m}^3/\text{d}$ in the first quarter of 1986, and maintaining that level throughout 1986. The 45 % jump in imports was primarily the result of opportunities offshore, for both refiners and marketers, reflecting the substantial fall in crude oil and petroleum products in the first half of 1986. The increase was distributed about equally in the Atlantic, Quebec and Ontario.

In the first quarter of 1987, about $20 \times 10^3 \text{ m}^3/\text{d}$ of product imports entered Canada, including $8 \times 10^3 \text{ m}^3/\text{d}$ each into the Atlantic region and Quebec. Over the last five quarters, total product imports have averaged about $19 \times 10^3 \text{ m}^3/\text{d}$, with Atlantic and Quebec imports varying significantly from quarter to quarter.

GROSS REGIONAL PETROLEUM PRODUCT IMPORTS



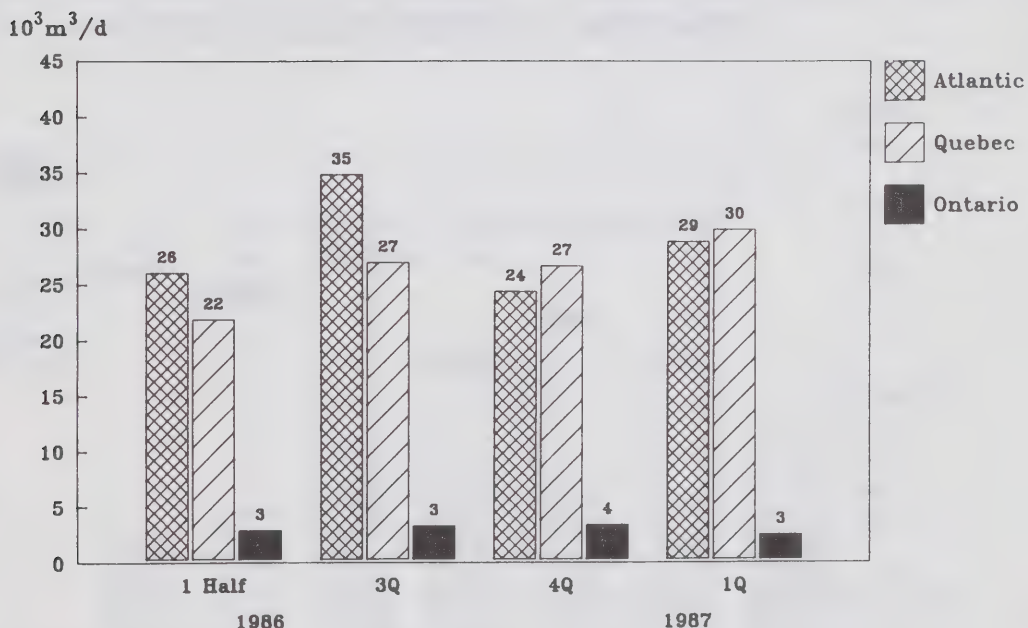
Source: Statistics Canada

8. COMPOSITION OF CRUDE OIL IMPORTS

Crude oil imports, at $62 \text{ } 10^3 \text{m}^3/\text{d}$, were greater than both first quarter of 1986 and annual 1986 levels. All of the increase occurred in Quebec, where imports rose almost $6 \text{ } 10^3 \text{m}^3/\text{d}$, to $30 \text{ } 10^3 \text{m}^3/\text{d}$, compared with the 1986 average. While a portion of this increase can be attributed to pipeline constraints, most of the rise reflects increased receipts at Quebec City.

Both imports into the Atlantic, at $29 \text{ } 10^3 \text{m}^3/\text{d}$, which included 7 to $8 \text{ } 10^3 \text{m}^3/\text{d}$ of oil for re-export as refined products, and imports into Ontario, at less than $3 \text{ } 10^3 \text{m}^3/\text{d}$, remained unchanged from previous periods.

CRUDE OIL IMPORTS BY REGION



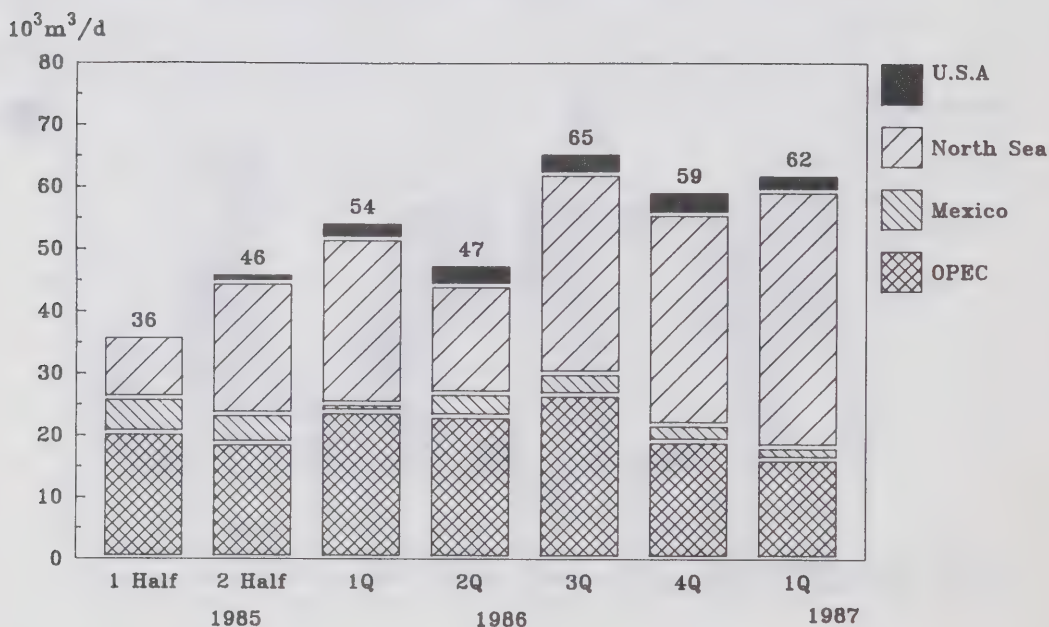
Source: Refiners' Submissions
to the National Energy Board

There was a distinct shift in import sourcing, from OPEC to North Sea crudes in the first quarter. North Sea imports accounted for over 75% of all foreign crude receipts, or $44 \times 10^3 \text{ m}^3/\text{d}$, versus 55%, on average, in 1986. The shift was most pronounced in March, when receipts from the North Sea reached 90% of total imports.

The shift to North Sea crudes largely involved nonpipeline connected refineries. This reflected in part, a price advantage for North Sea crudes, compared with light African and Middle East crudes, which were priced at OPEC-determined reference levels. This price differential was evident through much of February. In addition, refiners may also have increased refinery throughput in order to take advantage of relatively low priced North Sea crudes, and to build product inventories in anticipation of refinery maintenance turnarounds in the second quarter.

As a result of the sharp increase in North Sea imports, deliveries from OPEC countries declined to about 25% of the total, versus about 40% in 1986. On a relative basis, imports from Africa and Venezuela registered the largest decline.

SOURCES OF CRUDE OIL IMPORTS



Source: Refiners' Submissions
to the National Energy Board

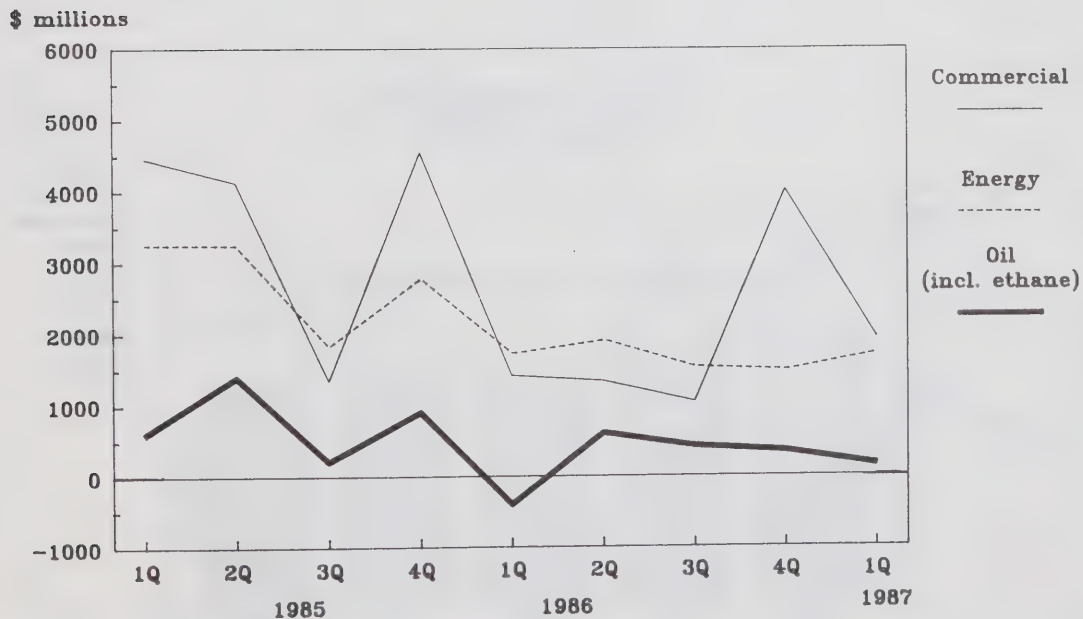
9. OIL TRADE BALANCE

During the first quarter of 1987, Canada had an oil trade surplus of \$156 million and a volumetric surplus of almost $25 \times 10^3 \text{ m}^3/\text{d}$. On a year-over-year basis, the value of oil trade improved by \$550 million, as there had been a deficit of \$395 million during the first quarter 1986 - (see The Canadian Oil Market, Vol. II, No. 1 for further details). The volumetric surplus doubled from the first quarter of 1986, mainly reflecting an increase in net crude oil exports.

The energy trade surplus rose to \$1939 million, an increase of \$206 million and \$452 million, in comparison to the year earlier period and the previous quarter, respectively. The surplus was the highest since the fourth quarter of 1985, when it reached \$2780 million. While oil trade improved by over \$550 million from the first quarter of 1986, as a result of higher oil prices, and an increase in the net oil exports, a decline of over \$300 million in natural gas and liquid petroleum gases trade offset a portion of the gain in oil trade. A decline in export prices was the main factor affecting the decrease in the natural gas trade surplus.

It should be noted that the volumetric trade figures referred to in this section originate from a different publication (Statistics Canada), than some of the data referred to in Section 7, Exports and Imports (National Energy Board) and, therefore do not necessarily correspond.

OIL AND ENERGY TRADE BALANCE (Quarterly)



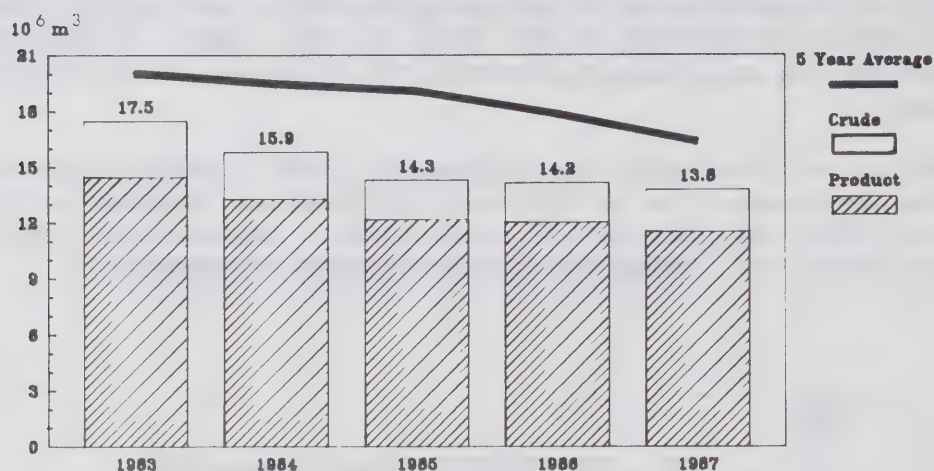
Source: Statistics Canada

10. STOCKS

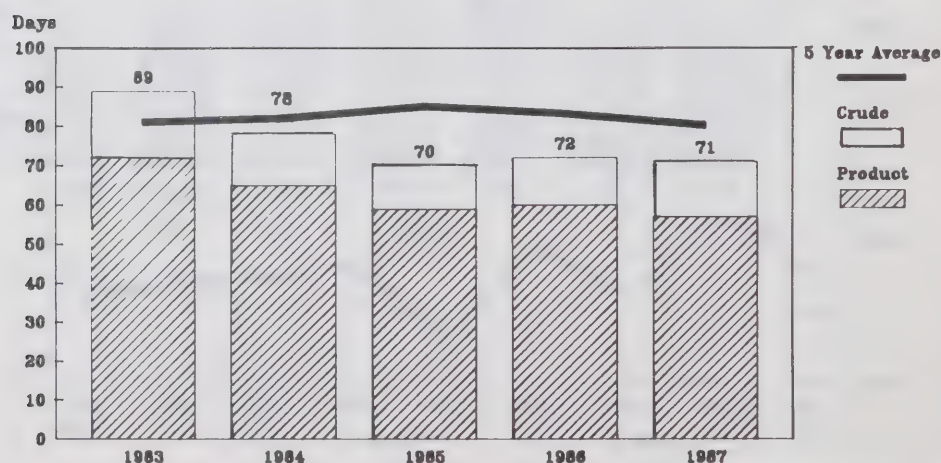
The oil industry continued a typical seasonal pattern and increased petroleum product stocks at the rate of $9.2 \times 10^3 \text{ m}^3/\text{d}$ during the first quarter of 1987. However, the absolute closing first quarter stock level declined by about 500 000 cubic metres (about 4%), to 11.5 million cubic metres, compared with March 1986 as refiners continued to rationalize stock levels.

Based on a forecast level of domestic demand in the second quarter of 1987, days of forward consumption is estimated to have declined by about 3 days, to 53 days, at the end of the first quarter. This reflects lower stock levels on one hand, and a forecast rise in consumption, on the other.

CLOSING INVENTORIES - CANADA
(First Quarter)



DAYS OF FORWARD SUPPLY
(First Quarter)



Source: Statistics Canada
Energy, Mines and Resources

With respect to crude oil inventories held in storage at refineries, there was a marginal draw during the first quarter. Absolute closing inventories were up over 100 000 cubic metres, to just under 2.3 million cubic metres, versus the closing stock position in March 1986.

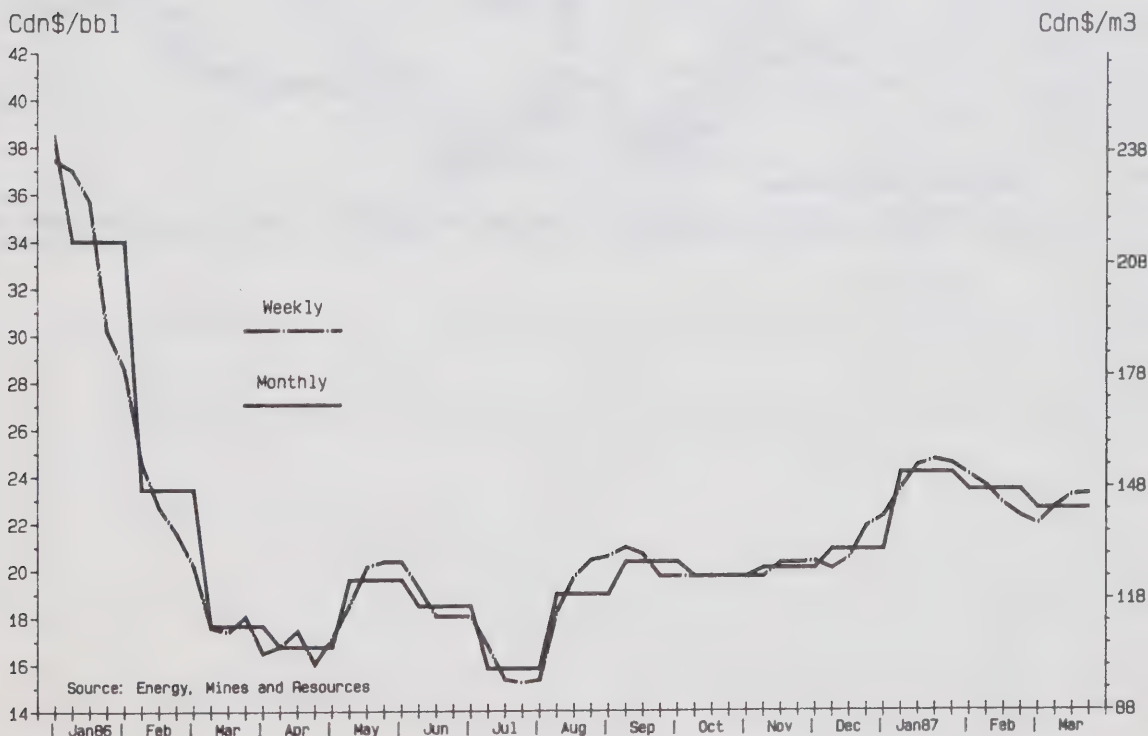
Crude oil stocks include oil held in pipeline tankage under the International Energy Agency (IEA) definition. Days supply of crude oil in Canada at the end of the quarter, which includes approximately 2 million cubic metres in pipeline tanks, was estimated at about 18 days. Days supply of all crude oil and petroleum product commercial stocks were estimated at about 71 days at the end of March, versus an IEA average of 75 (excluding government stocks).

11. PRICES

11.1 Light and Heavy Crude Oil

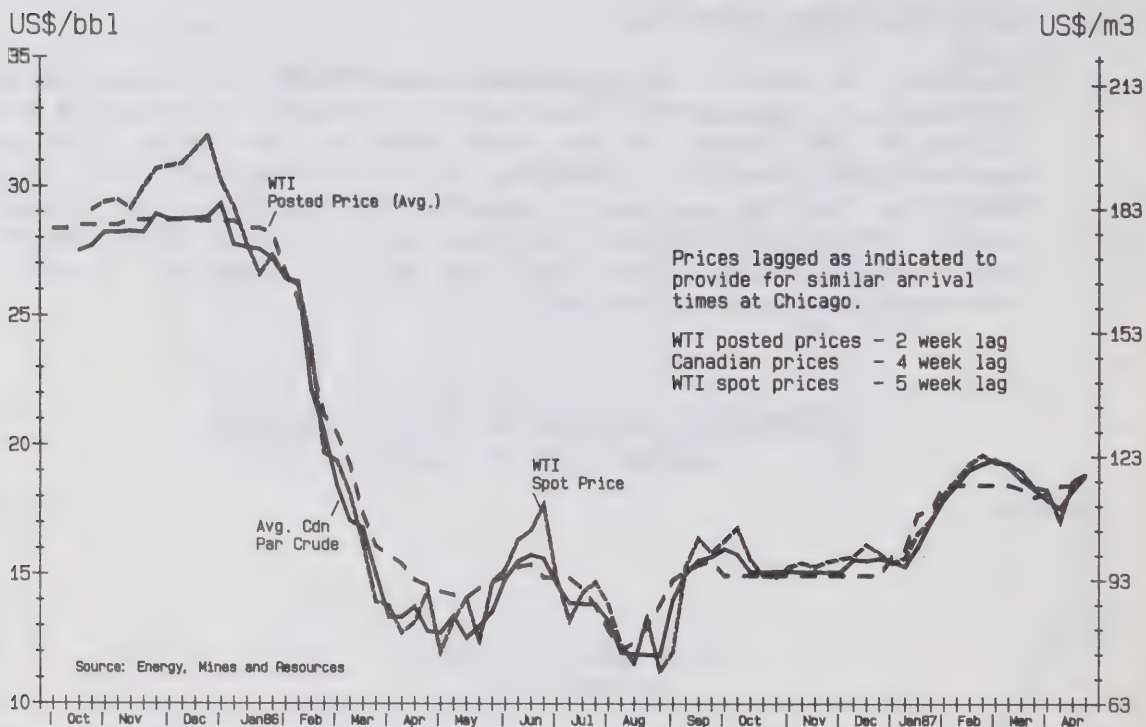
Canadian, as well as international light crude oil prices increased substantially during the first half of January, and reached a high of \$24.95 per barrel in the third week of the month. The price increase was mainly attributable to the tightening of oil supply resulting from the successful December OPEC agreement on production quotas. Thereafter prices declined to a low of about \$21.35 in early March, however by the end of the quarter, prices had recovered to \$23.25 per barrel.

Edmonton Light Crude Postings 40°API, <0.5% Sulphur



Canadian light crude oil prices continue to follow the trend set by international crudes, primarily the U.S. benchmark crude, West Texas Intermediate (WTI). After adjustments for delivery times to Chicago, the close relationship between posted and spot prices for WTI and Canadian par crude prices in particular over the first quarter 1987, is evident.

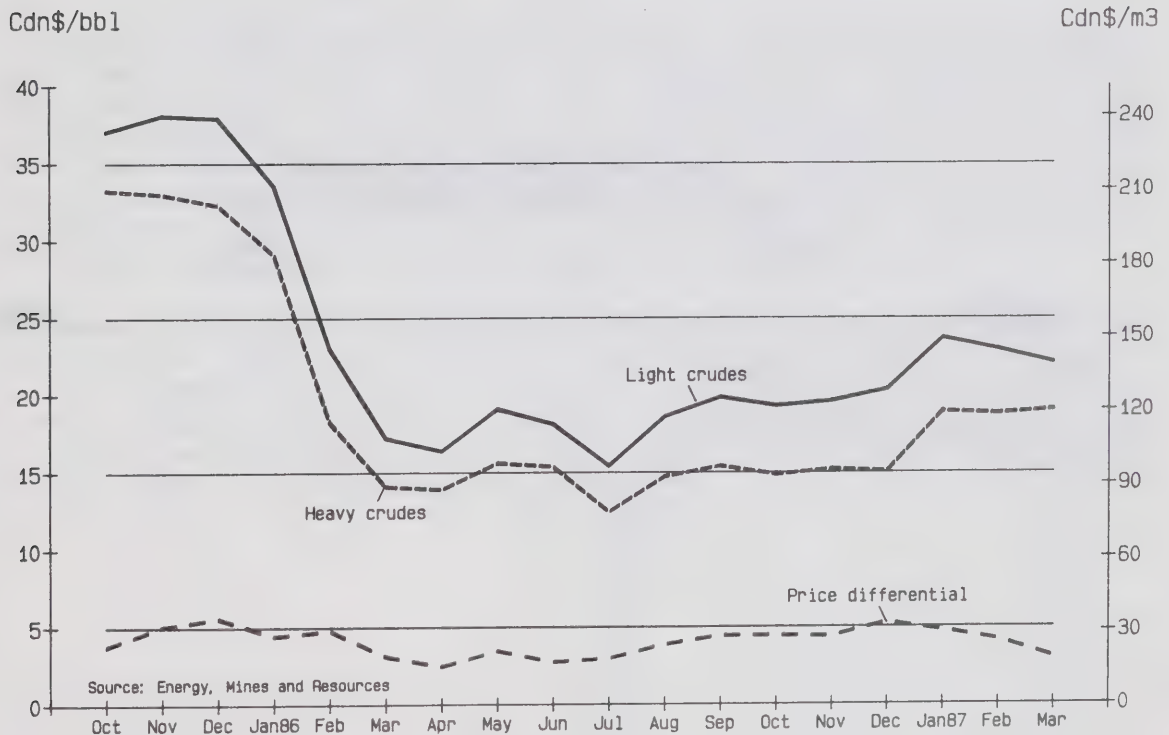
Light Crude Oil Delivered To Chicago



The graph below compares actual prices for domestic light and heavy crude oil, purchased for use in Canada at main trunk line injection stations. On average, light crude oil quality during the first quarter 1987 was 38.1°API, 0.43% sulfur and heavy crude oil was 24.2°API, 2.64% sulfur. The variation in the price differential shown at the bottom of the graph is largely explained by the influence of seasonal demand factors.

The differential between Canadian light and heavy crude prices was about \$4.75 per barrel in January and \$3.00 in March. This heavy crude price strengthening, relative to light crude, is attributed to the beginning of the asphalt season. The first quarter 1987 differentials are very similar to those of one year ago.

Comparison of Domestic Light and Heavy Crudes Actual Purchase Prices

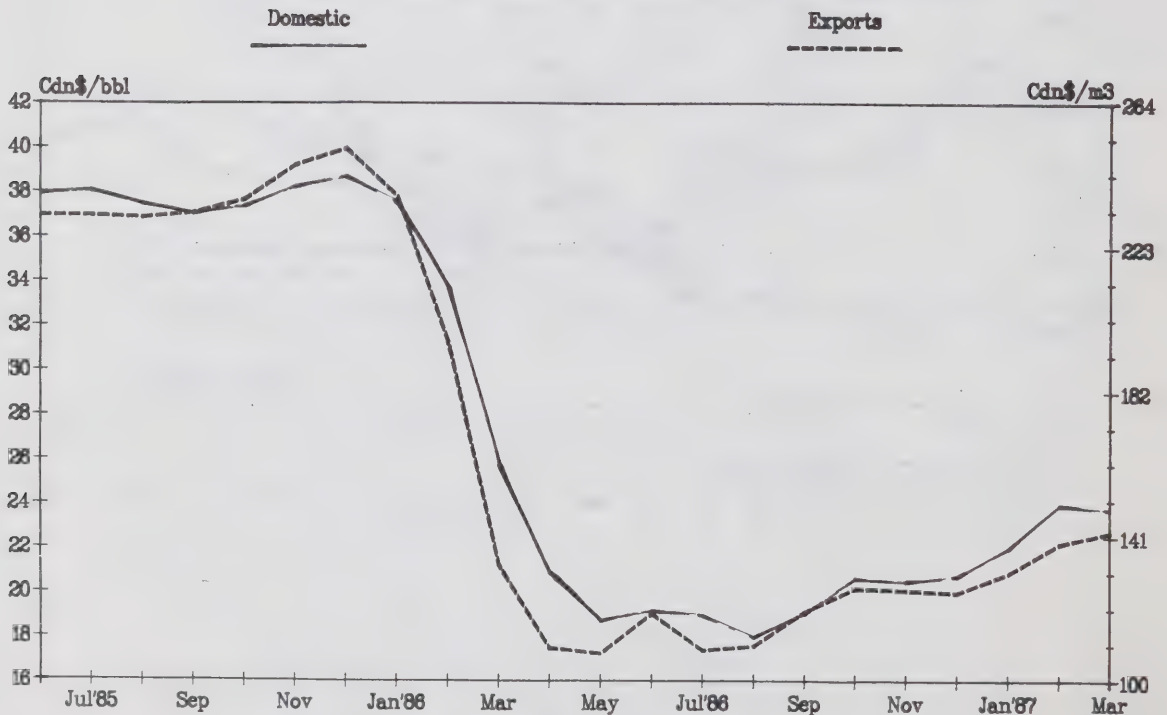


11.2 Crude Oil Prices: Export vs. Domestic

During the first quarter of 1987, the gap (which remains in favor of export values) between light crude oil export prices and domestic light crude costs to Ontario refiners widened to a \$1.30 per barrel in the first quarter compared with a \$0.55 per barrel difference in the fourth quarter of 1986. Both domestic and export crude oil prices rose from the fourth quarter of 1986, however, domestic crude oil costs increased by \$2.60 per barrel, while export prices rose by \$1.80 per barrel.

Crude discounts related to pipeline constraints, and higher exports of Alberta supplementary crude into relatively lower-priced U.S. markets (Montana and Washington), contributed largely to maintaining a gap between domestic (Ontario) and export crude prices. The gap widened in the first quarter, compared with the previous six months (when it had ranged from about \$0.15 to \$0.70 per barrel), as a result of a greater percentage of export sales (both primary and supplementary) into lower-priced U.S. regions. These sales accounted for over a third of Canadian exports in the first quarter of 1987, compared with less than 25% in the previous six months.

CANADIAN LIGHT CRUDE EXPORT AND ONTARIO DOMESTIC ACQUISITION VALUES



* Both values adjusted for transportation cost to a common point (Ontario)

11.3 Product Prices

Retail prices for petroleum products continued to increase during the first quarter of 1987. While average retail gasoline prices increased about 3.4¢/litre, March 1987 prices remained about 8¢/litre below the January 1986 level.

Contributing to the first quarter gasoline price increase was the flow-through of higher crude costs experienced during December 1986 and January 1987, and an overall federal consumption tax increase of 1.75¢/litre (see Appendix II). The federal excise tax was increased 1.0¢/litre on two occasions, January 1 and February 19, 1987. These tax increases were, however, partially offset by the 0.25¢/litre decrease in the federal sales tax, the largest reduction since gasoline prices began to fall during the first quarter of 1986.

The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in a 12 month average industrial product price index for gasoline, with a one-quarter lag. The significant price declines of the first half of 1986 have had an impact on the level of the sales tax, which will continue to affect it over the second quarter of 1987.

During the first quarter, retail diesel prices reflected a 2¢/litre increase, with net declines since January 1986 of slightly under 4¢/litre. While this decline is significantly less than that of retail gasoline, the retail diesel market represents only about 15% of total diesel sales, while more than 85% of gasoline sales are at the retail level. In the commercial and industrial class of trade, where more than 50% of diesel fuel is sold, price declines have virtually paralleled those for gasoline.

Heating oil prices in the Atlantic provinces were generally stable during the first four months of 1987, while in Ontario and Quebec they increased between 2.0 and 4.5¢/litre (see Appendix III). The bulk of the price increases in Quebec and Ontario were recorded during January and February 1987. In all centres prices were considerably lower than they were a year previously.

SPECIAL SUPPLEMENT

12. MOTOR GASOLINE PRICE DIFFERENTIALS

Gasoline price analysis has tended to focus on regular leaded gasoline. However, lead phase-down and the increased use of unleaded fuels have resulted in different market pressures on prices for the various grades of gasoline. This section examines the relationships that have evolved among the prices of the three main grades of gasoline - regular leaded (RL), regular unleaded (RUL), and premium unleaded (PUL).

The bar charts on the next three pages depict retail price differentials, at self-serve stations, in five major Canadian cities for the eight years from 1979 to 1986, on both a "with tax" and an "ex-tax" basis.

The evolution of Canadian sales volumes by grade of gasoline is illustrated in the pie charts for the eight years and includes a regional breakdown for 1986.

Grade differentials increased in Canada over the 1979-1986 period, moving from the 1.0 to 2.0¢/litre range (regular leaded vs regular unleaded and premium unleaded respectively) to spreads of 2.0 to 4.5¢/litre.

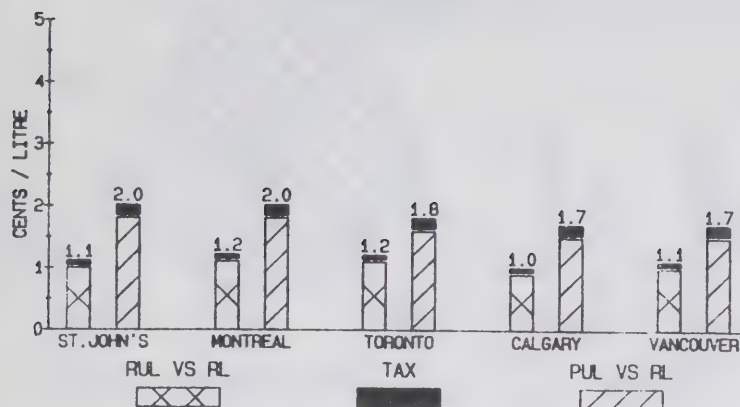
The upward movement was more significant in the eastern part of the country, where the shift from RL gasoline use to the unleaded grades was more pronounced.

These changes were largely market-driven, since the impact of tax differentials was minimal. The exception was Quebec, which had significant tax spreads between 1982 and 1986, but returned to a uniform tax level for all grades of gasoline on May 1, 1987.

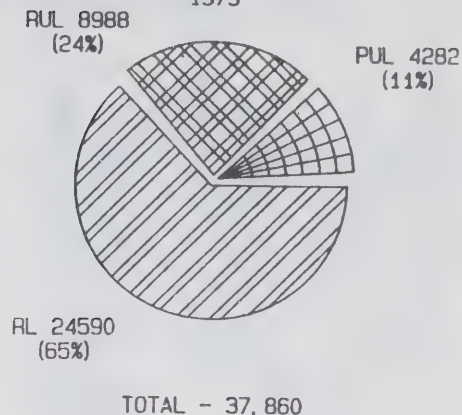
The federal sales tax difference was less than 0.4¢/litre in January 1986 and only a few provinces had any provincial sales tax grade differentials. In fact, only New Brunswick now has a higher tax for unleaded gasolines compared to leaded.

In Manitoba and British Columbia the tax on RL is higher than the tax on the unleaded grades, in an effort to reduce the use of leaded gasoline in vehicles designed to use unleaded fuel.

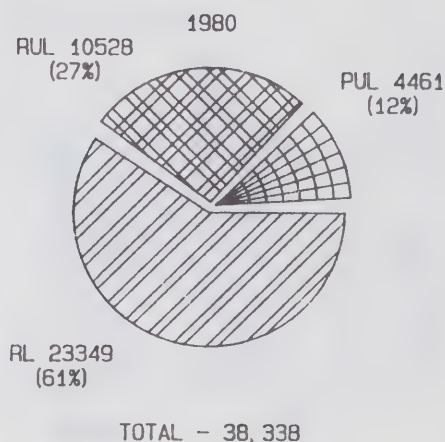
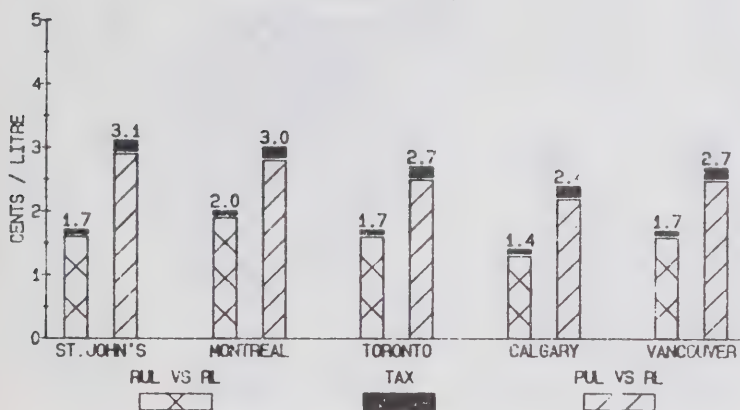
**SELECTED CENTRE
RETAIL PRICE DIFFERENTIALS
JANUARY 1979**



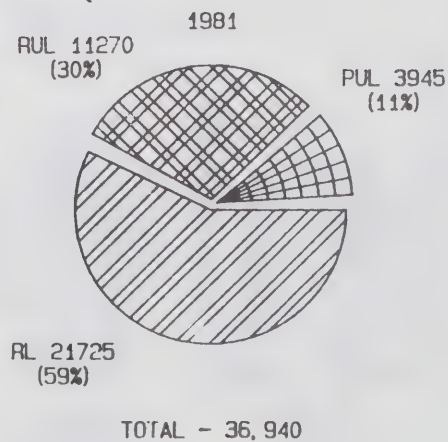
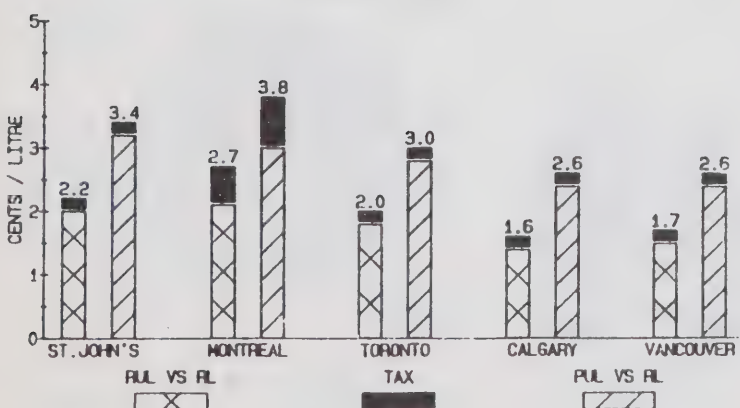
**CANADIAN SALES VOLUMES
THOUSANDS OF CUBIC METRES
1979**



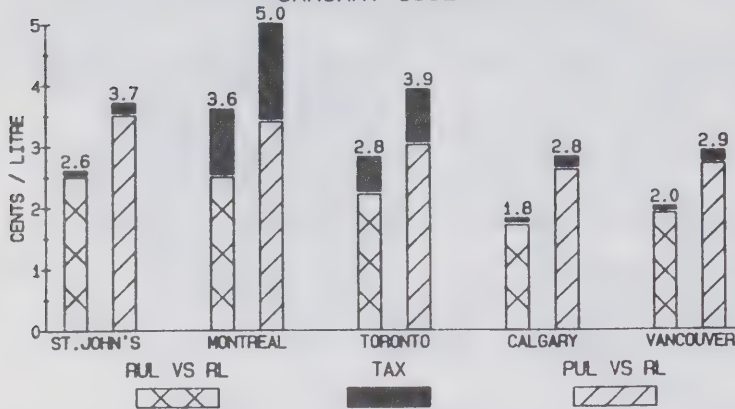
JANUARY 1980



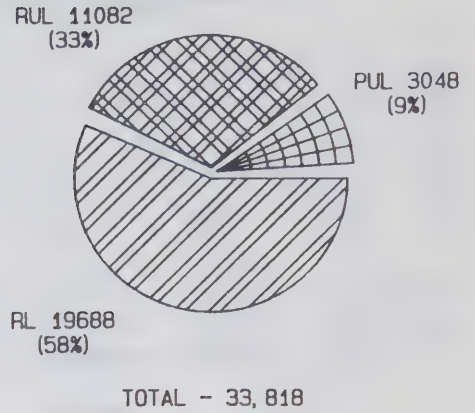
JANUARY 1981



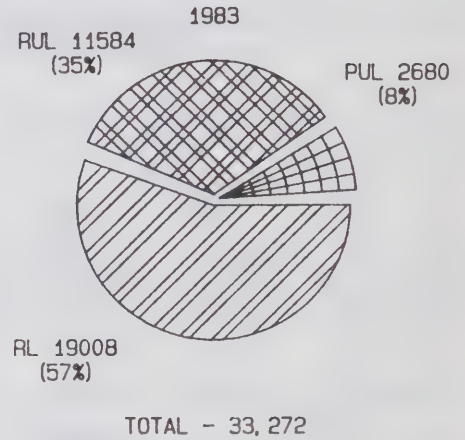
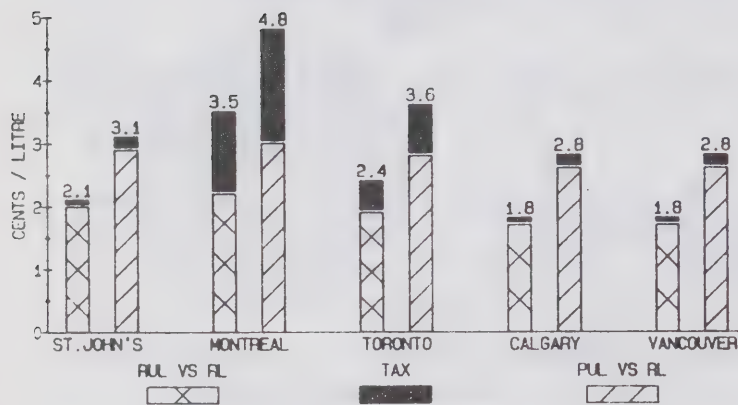
SELECTED CENTRE
RETAIL PRICE DIFFERENTIALS
JANUARY 1982



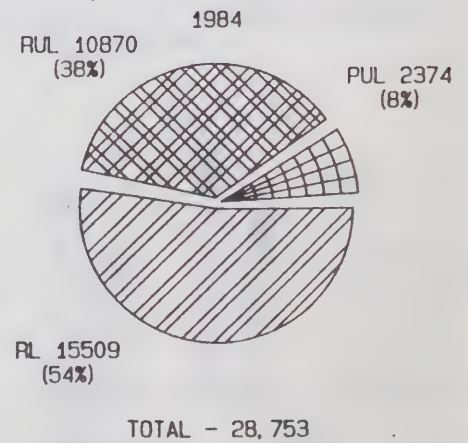
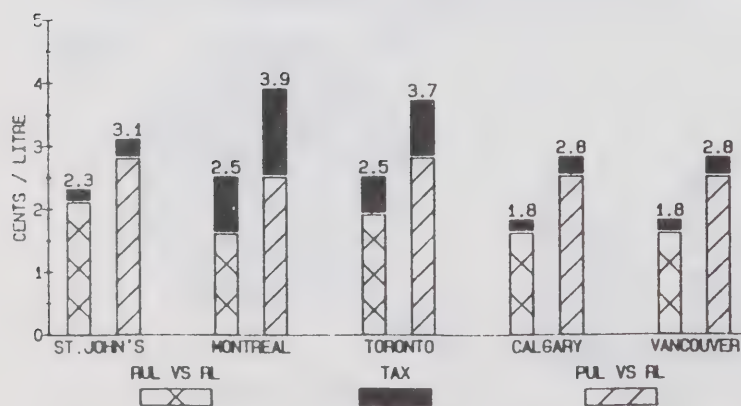
CANADIAN SALES VOLUMES
THOUSANDS OF CUBIC METRES
1982



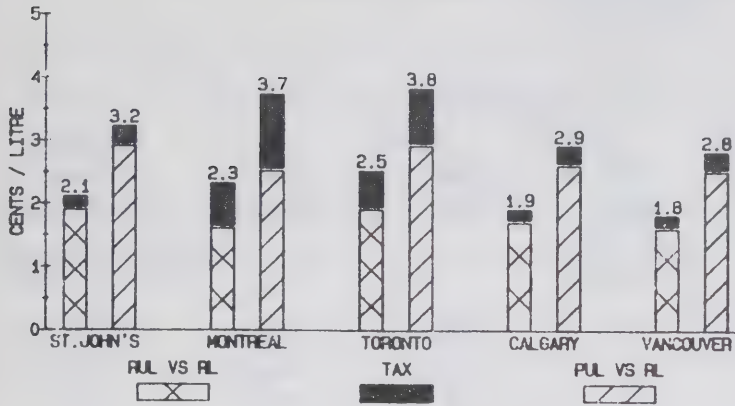
JANUARY 1983



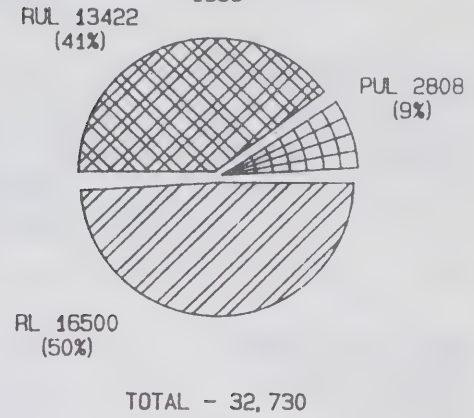
JANUARY 1984



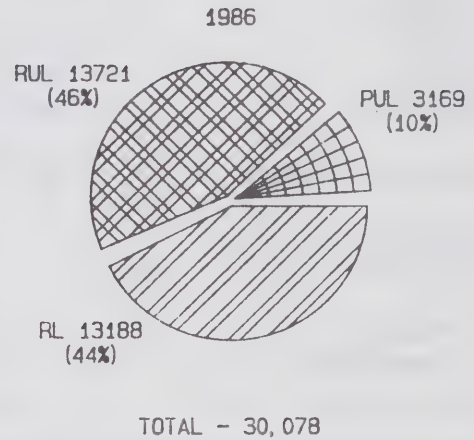
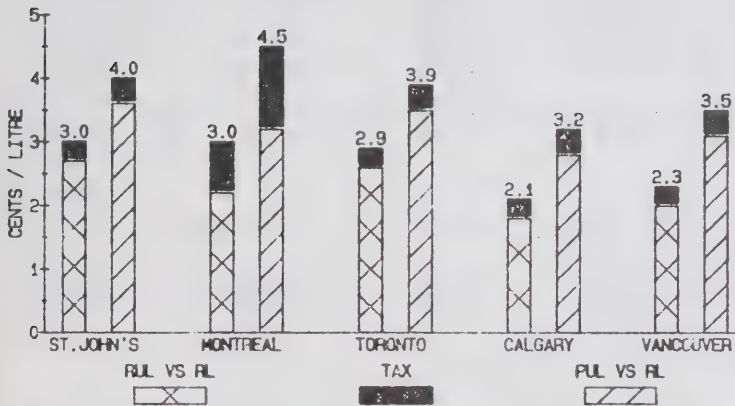
SELECTED CENTRE
RETAIL PRICE DIFFERENTIALS
JANUARY 1985



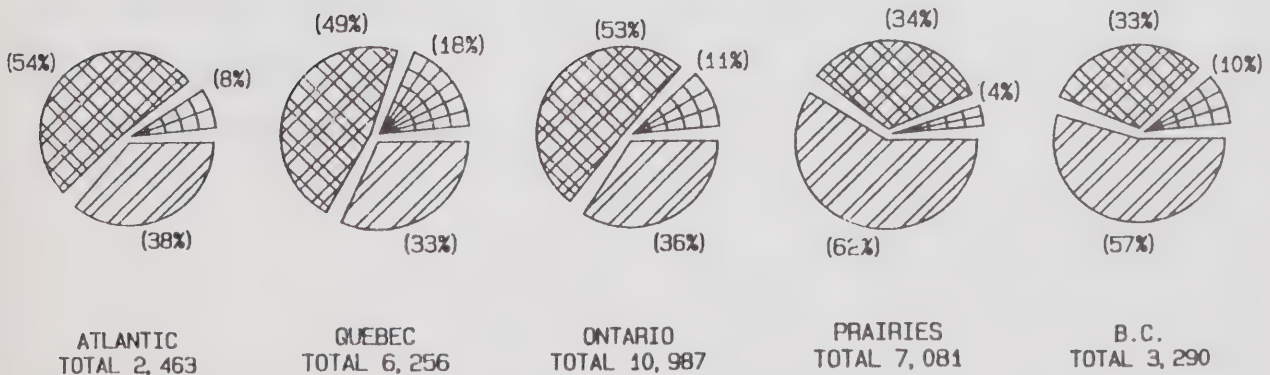
CANADIAN SALES VOLUMES
THOUSANDS OF CUBIC METRES
1985



JANUARY 1986



1986 SALES DISTRIBUTION



Appendix I

AVERAGE REGULAR LEADED GASOLINE, PRICES
FULL-SERVE AND SELF-SERVE
1986-1987

	1986 June	1986 Sept.	1986 Dec.	1987 March	Change Last 12 Months
	(¢/Litre)				(%)
St. John's (Nfld.)	51.6	49.9	50.6	53.1	-13.7
Charlottetown	48.0	47.3	49.2	51.3	-11.2
Halifax	46.8	46.7	48.7	50.9	-10.2
Saint John (N.B.)	50.2	43.9	44.4	44.8	-25.8
Montreal	47.2	47.2	48.9	52.6	-9.0
Ottawa	44.9	41.6	43.2	47.1	-8.5
Toronto	40.3	38.7	40.4	42.8	-11.6
Winnipeg	45.6	45.6	45.4	47.1	-8.7
Regina	37.7	34.9	29.0	40.7	-2.2
Calgary	36.6	36.5	36.3	39.0	-11.4
Vancouver	42.7	40.0	41.0	46.1	-12.7
Canadian average	42.0	40.6	41.2	44.6	-11.7
Consumption taxes included:					
- Federal	7.5	7.5	7.3	9.0	7.4
- Provincial	7.7	7.3	7.2	6.8	-7.9

Price Source - Statistics Canada

Appendix II

CONSUMPTION TAXES ON PETROLEUM PRODUCTS,
March 1, 1987

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(%)		(¢/Litre)			
<u>Federal Taxes</u>						
Sales *			3.52	3.85	3.96	3.22
Excise *			5.5	5.5	5.5	4.0
<u>Provincial Taxes</u>						
Newfoundland*	22	26	9.8	9.8	9.8	12.1
Prince Edward Island*	20	23	9.0	9.0	9.0	10.9
Nova Scotia*	20	21	8.9	8.9	8.9	9.3
New Brunswick*	20	23	7.7	8.2	8.5	8.2
Quebec (a)		—	13.65	14.4	14.7	12.45
Ontario	—	—	8.3	8.3	8.3	9.9
Manitoba (b)	—	—	8.9	8.0	8.0	9.2
Saskatchewan	—	—	—	—	—	—
Alberta	—	—	—	—	—	—
British Columbia*	20(c)	20(c)	6.39	6.39	6.39	6.83
Yukon	—	—	4.2	4.2	4.2	5.2
Northwest Territories	17	(d)	8.4	8.4	8.4	7.1

(a) Reduced by one third in certain remote areas and within 5 kilometres of the provincial border.

(b) Reduced by varying amounts within 60 kilometres of the border with Saskatchewan.

(c) Additional transit tax of 0.95¢/litre in Vancouver.

(d) 85% of gasoline tax.

* Changed from last quarter

Appendix III

Residential Furnace Oil Prices
1986-1987

	Apr. 1986	Sept. 1986	Dec. 1986	Apr. 1987	Change last 12 Months
	(¢/Litre)				(%)
St. John's (Nfld.)	36.2	30.7	32.3	32.4	-10.5
Charlottetown	32.7	30.7	32.3	32.3	-1.2
Halifax	32.3	28.3	29.9	28.7	-11.1
Saint John (N.B.)	34.9	31.4	33.0	33.0	-5.4
Quebec City*	32.2	25.3	26.9	28.9	-10.2
Montreal*	31.9	24.3	25.0	28.0	-12.2
Ottawa	35.3	28.5	27.5	31.5	-10.8
Toronto	34.2	28.3	26.6	31.2	-8.8

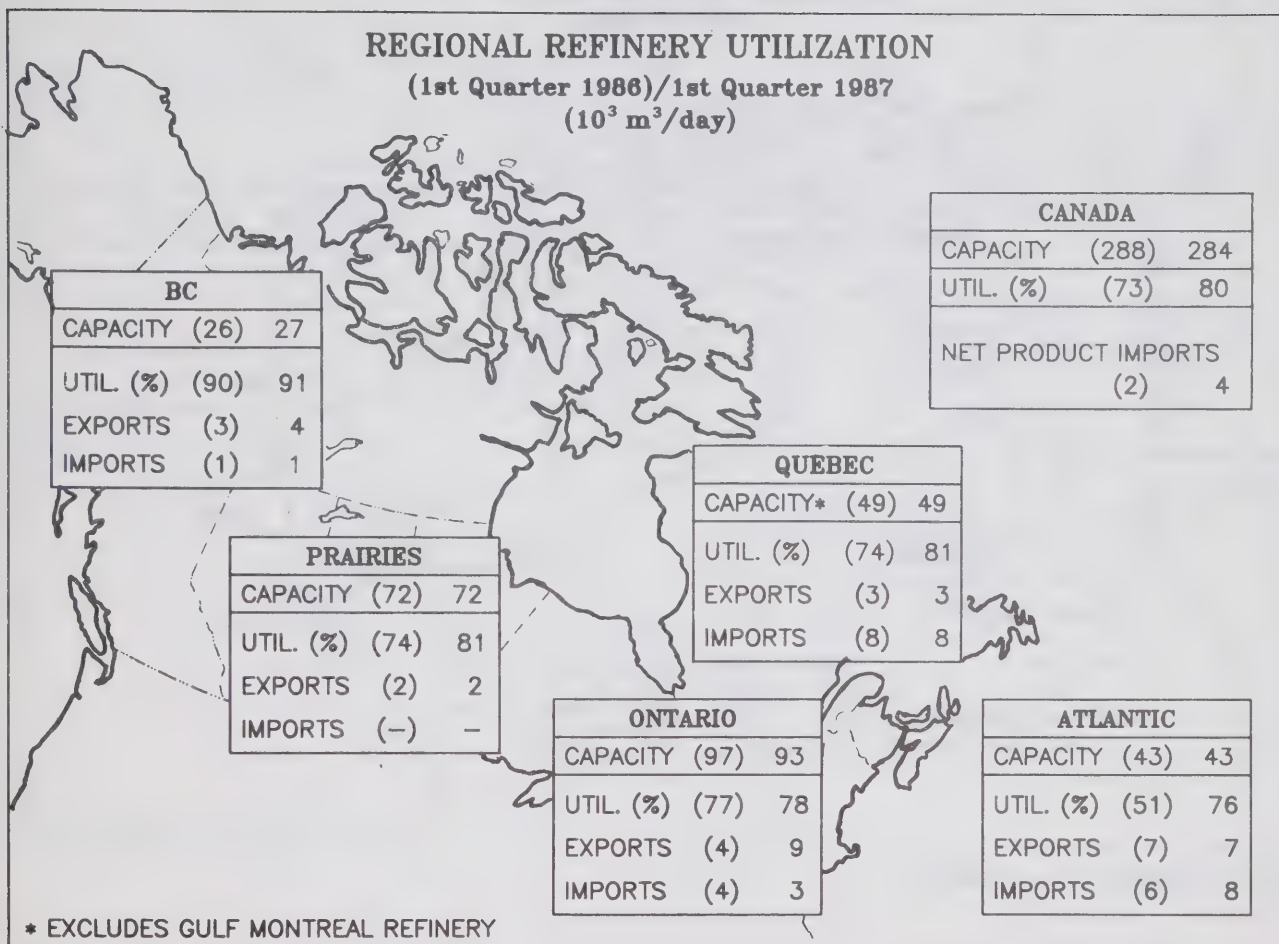
* provincial sales tax (9%) included in September, December of 1986 and April of 1987 prices

Price Source - Statistics Canada

Appendix IV

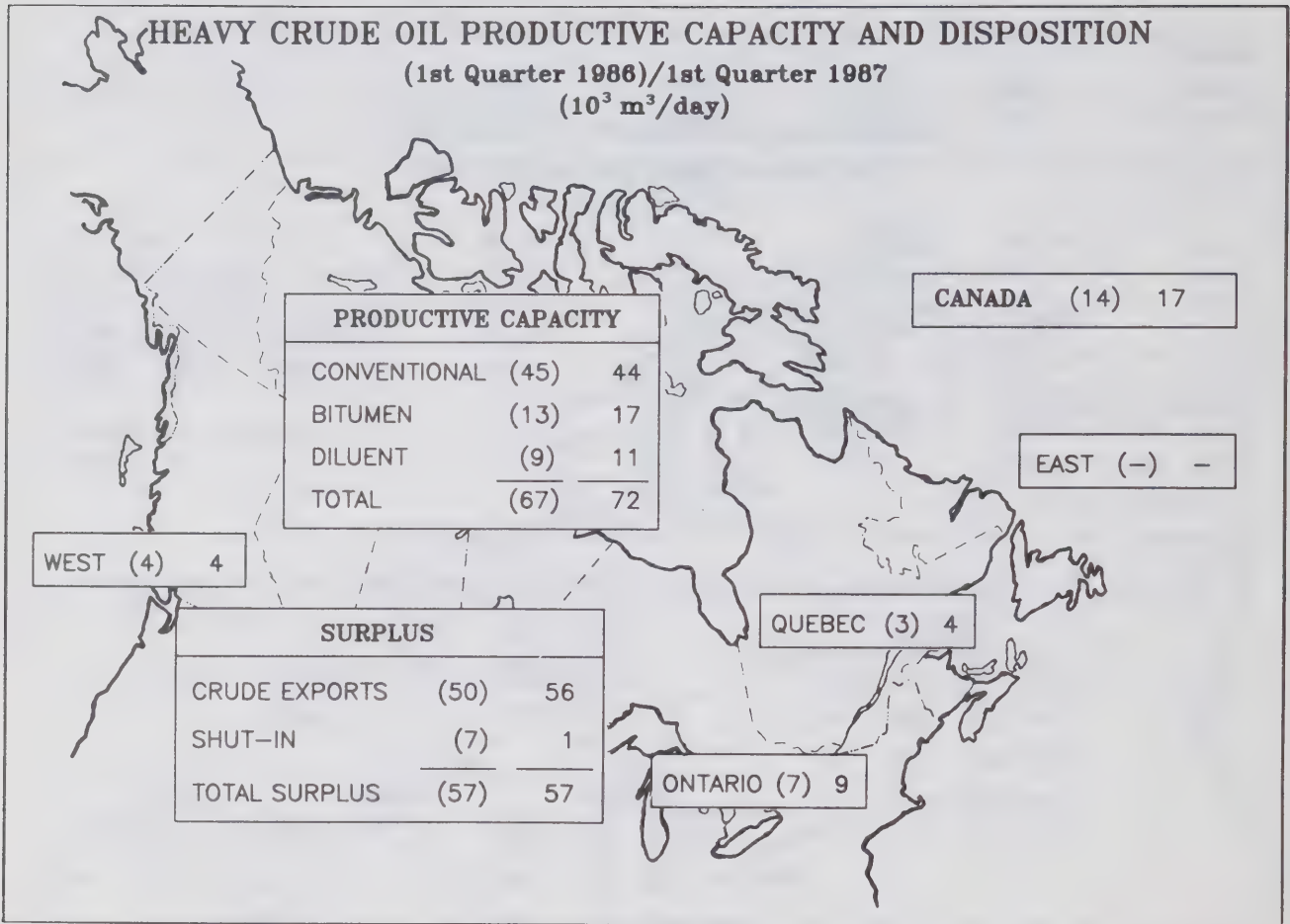
REGIONAL REFINERY UTILIZATION

(1st Quarter 1986)/1st Quarter 1987
(10³ m³/day)



Source: Statistics Canada

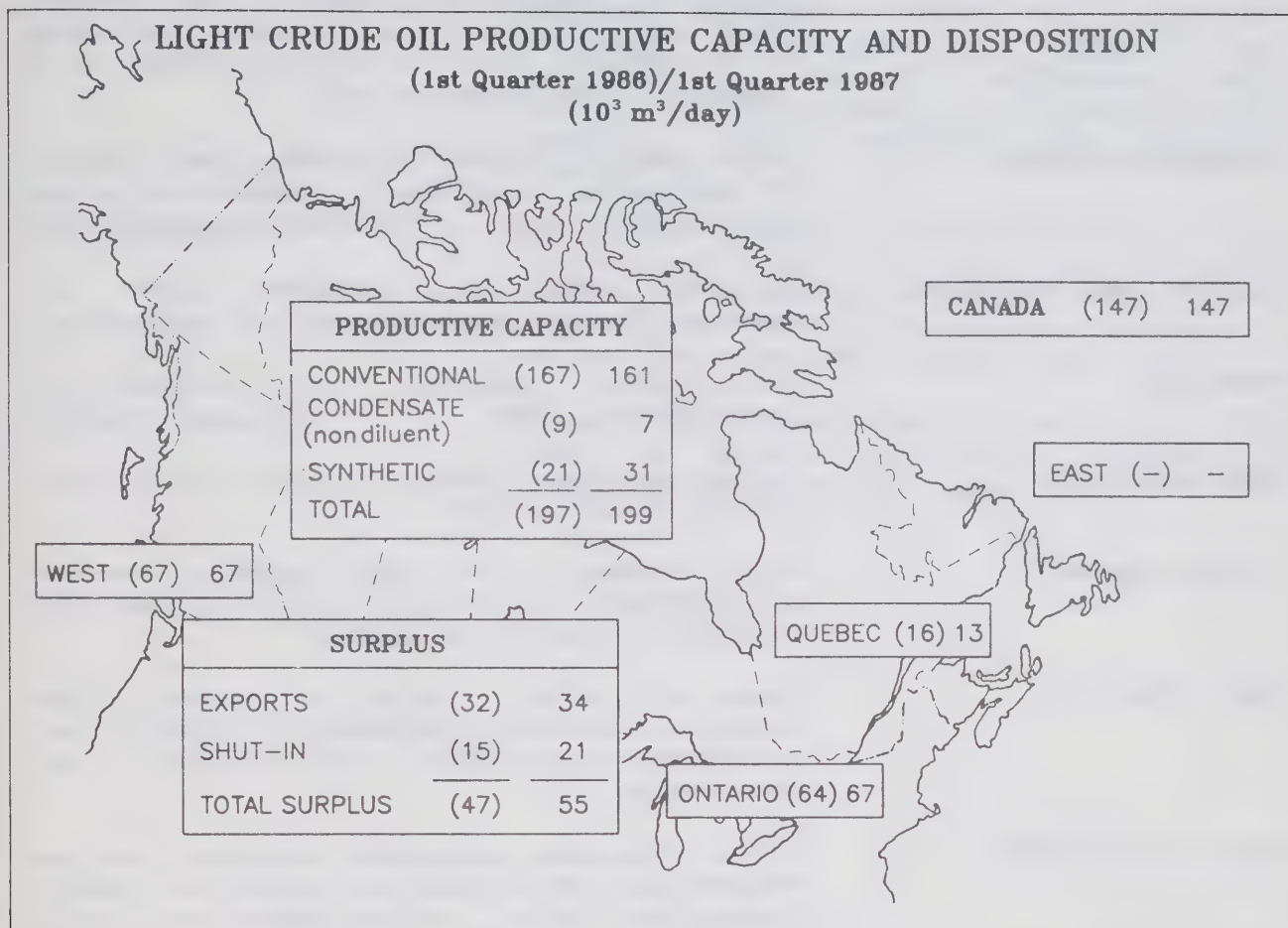
Appendix V



SOURCE: National Energy Board

Note: Differential between productive capacity and disposition attributed to stock change.

Appendix VI



SOURCE: National Energy Board

Note: Differential between productive capacity and disposition attributed to stock change.

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as condensate. A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity

Also referred to as **producibility**. The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

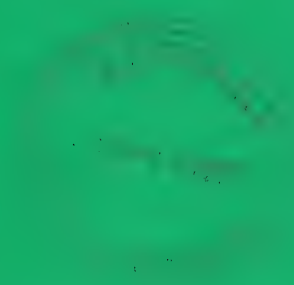
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Energie, Mines et
Ressources Canada

L'Hon. Marcel Masse,
Ministre

The Canadian Oil Market

Vol. III, No. 2 Second Quarter 1987



Canada

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Department of Energy, Mines and Resources
613-995-2500

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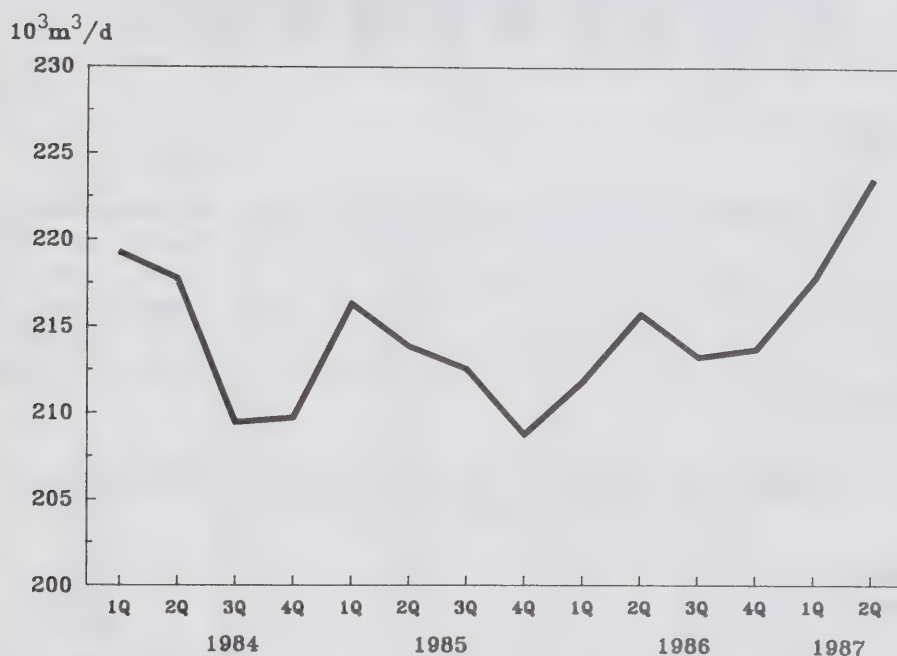
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THE CANADIAN OIL MARKET

1. DOMESTIC DEMAND

During the second quarter of 1987, seasonally adjusted petroleum product consumption rose to $223.5 \text{ } 10^3 \text{ m}^3/\text{d}$, the highest level experienced in Canada for several years. Consumption was up 2.6% from the first quarter of 1987, in line with the relatively strong rate of economic growth in the Canadian economy during the quarter.

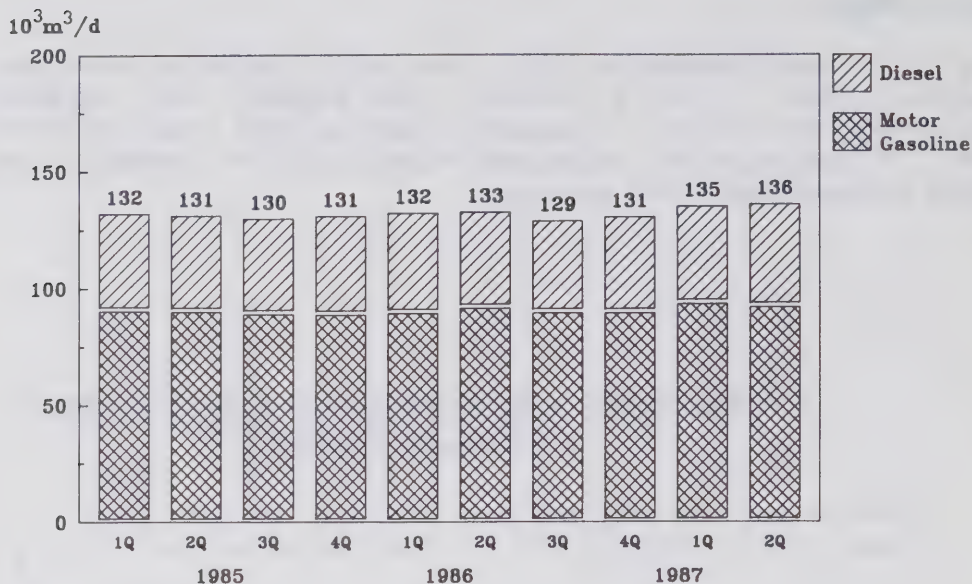
TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada

Among the product components of the total, only motor gasoline sales declined, down 1.4% from a very strong first quarter, but still more than 2% above the level of gasoline consumption in 1986. In contrast diesel fuel consumption rose by more than 4%, to $43.5 \text{ } 10^3 \text{ m}^3/\text{d}$, from the previous quarter and by almost 6% from the 1986 level. As a result of the decline in gasoline consumption, overall transportation fuel consumption was only marginally higher than the previous quarter, but it was still more than 3% above sales in 1986.

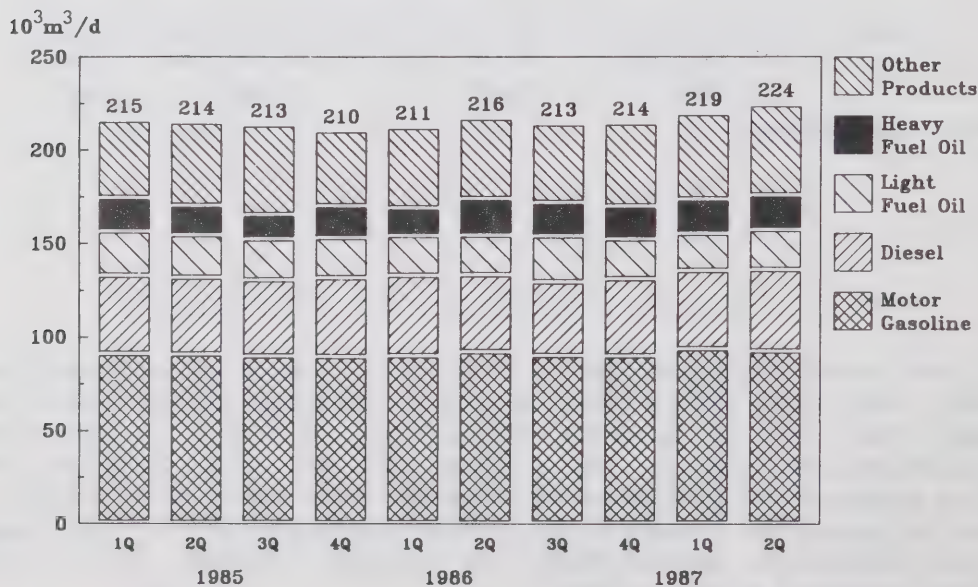
TRANSPORTATION FUEL CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada.

Light fuel oil consumption rose sharply (9%) from an abnormally low first quarter, to return close to the 1986 consumption level of 21.4 10³m³/d. Heavy fuel oil consumption continued to rise, up 2.8% from the previous quarter, to 18.5 10³m³/d, or almost 7% higher than consumption in 1986. A significant portion of this increase can be attributed to the abnormally high requirements in the Atlantic region to generate electricity because of low rainfall in the spring.

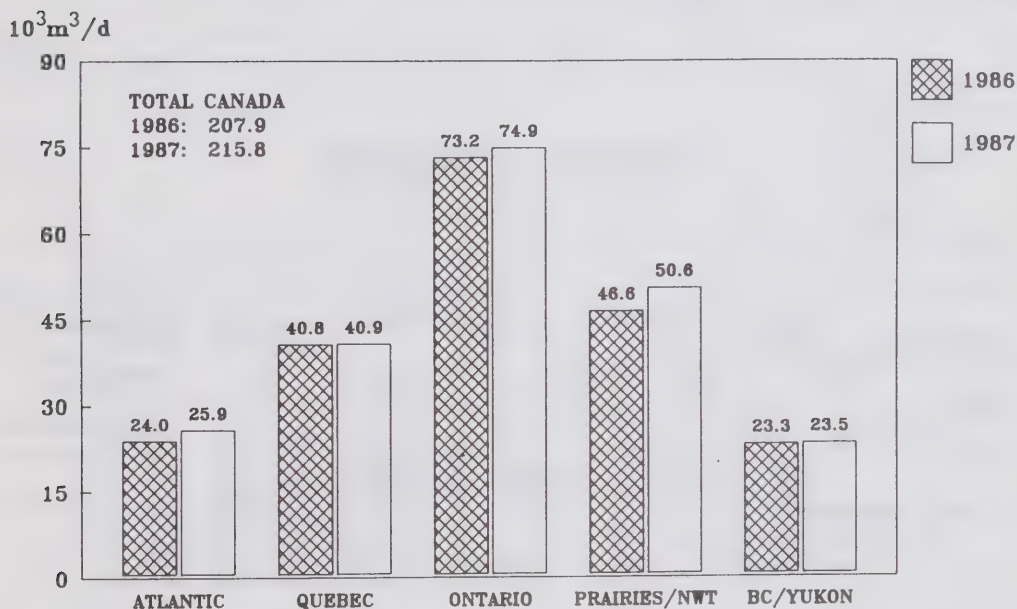
PETROLEUM PRODUCT CONSUMPTION BY PRODUCT (Seasonally Adjusted)



Source: Statistics Canada

Consumption (unadjusted for seasonality) rose in all regions to 215.8 $10^3\text{m}^3/\text{d}$ in total, up 3.8%, as compared with the second quarter a year earlier. The upturn was particularly strong in the Prairies and the Atlantic region (about 8%) reflecting some recovery from the low level of economic activity last year, in the former, and the higher electricity generation requirements this year, in the latter. Moderate growth continued in Ontario with consumption rising just over 2%, followed by British Columbia at 1%, and Quebec, where demand rose marginally. Sales of heavy fuel oil in Quebec were down sharply, compared with a year earlier, when some industrial consumers took advantage of some offshore supply at very attractive prices.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Second Quarter)



Source: Statistics Canada

Oil demand growth in Canada during the second quarter was quite strong, compared with other industrialized nations. Canada experienced the highest growth, at 3.8%, ahead of both the United States (3.1%) and Japan (3.3%). In all three countries increased demand for transportation fuels and petrochemical feedstocks were the main contributors to the increase. Canadian demand was also much stronger than in most European countries, such as West Germany (down 14.9%) and the United Kingdom (down 5.7%), where heavy fuel oil and heating oil sales lost market share to cheaper coal and natural gas.

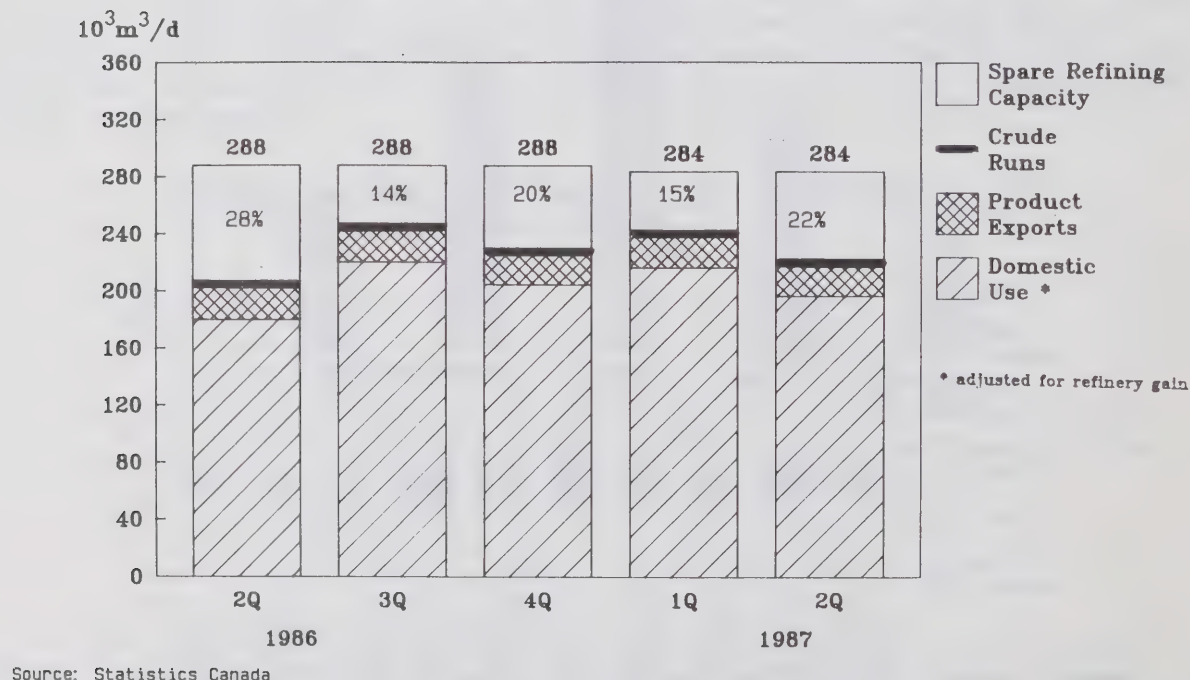
2. REFINERY UTILIZATION*

During the second quarter, crude and equivalent run to stills were $220 \text{ } 10^3 \text{ m}^3/\text{d}$, an increase of $13 \text{ } 10^3 \text{ m}^3/\text{d}$ over the same period in 1986. Increased domestic demand ($8 \text{ } 10^3 \text{ m}^3/\text{d}$), additional net exports ($2 \text{ } 10^3 \text{ m}^3/\text{d}$) and a smaller product inventory drawdown than in the second quarter of 1986 ($3 \text{ } 10^3 \text{ m}^3/\text{d}$), all contributed to the higher throughput.

As a result, effective utilization of refining capacity on a national basis increased from the 1986 level by almost 6 percentage points to 78%. On a regional basis, all regions registered higher utilization rates. The greatest improvement was in the Prairies where crude inputs were $4.5 \text{ } 10^3 \text{ m}^3/\text{d}$ higher than a year earlier, representing an increase of 6 percentage points in the refinery utilization rate of 79%. This increase reflected improved economic activity (higher product demand), greater product exports and an increase in product transfers to British Columbia.

In other regions, capacity utilization ranged from 66% in the Atlantic (an increase of 7 percentage points) to 89% in British Columbia. (See Appendix III for more details.)

REFINERY UTILIZATION



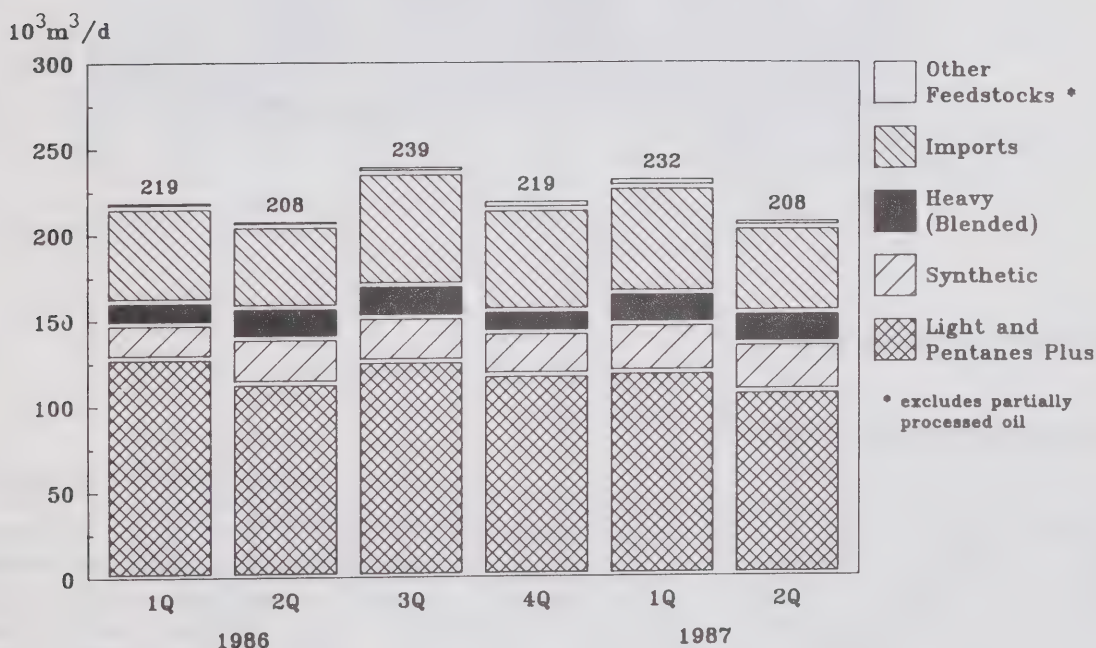
* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

3. CRUDE OIL RECEIPTS*

Crude oil receipts (including gas plant butanes and other feedstocks) at Canadian refineries were slightly higher in the second quarter of 1987, at about $209 \times 10^3 \text{ m}^3/\text{d}$, compared with the same period of 1986. The balance of the crude required to meet increased refinery throughput (see Refinery Utilization) was met by drawing down crude inventories, versus a substantial crude build in 1986.

The split between domestic and imported crude receipts remained the same - at 75% domestic and 25% imported. Domestic heavy crude deliveries to refineries also remained constant at $18 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL AND EQUIVALENT RECEIPTS AT CANADIAN REFINERIES

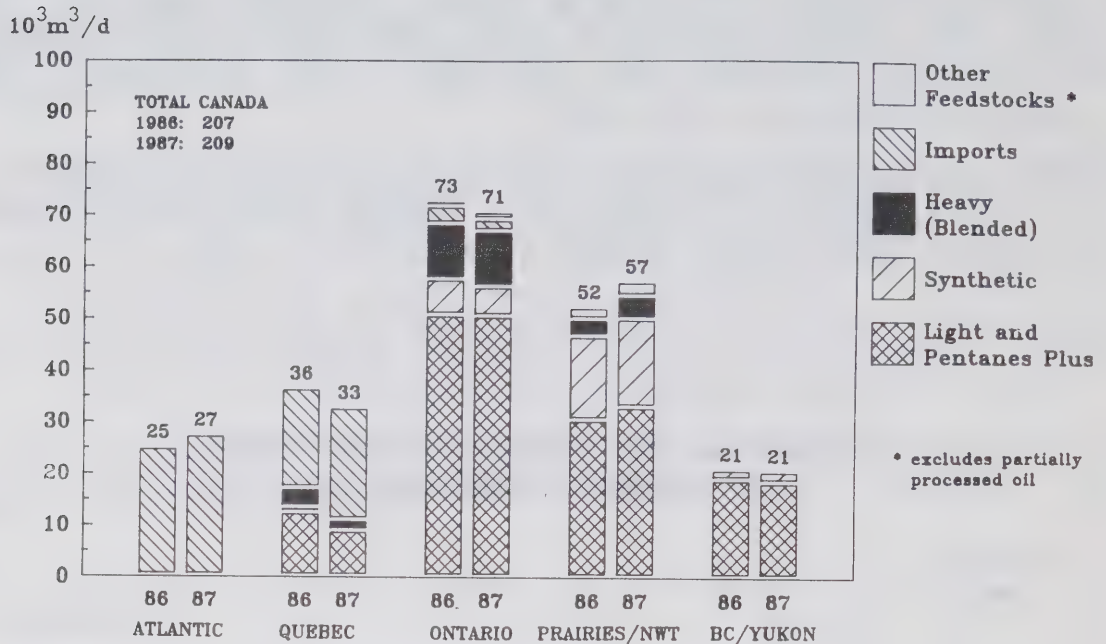


Source: Refiners' Submissions
to the National Energy Board

On a regional basis, the largest year-over-year changes occurred in Quebec and in the Prairies. Despite some domestic crude purchases for east of Montreal, overall domestic crude oil receipts in Quebec fell $6 \times 10^3 \text{ m}^3/\text{d}$, or 35%, to about $11 \times 10^3 \text{ m}^3/\text{d}$. A crude inventory draw this year as opposed to a build last year accounted for about half the decline, while increased imports offset the other half. In the Prairies domestic crude oil receipts rose 10%, to more than $54 \times 10^3 \text{ m}^3/\text{d}$.

* Calculated based on annual calendar day refining capacity, i.e., adjusted for downtime for planned refinery maintenance programs.

CRUDE OIL AND EQUIVALENT RECEIPTS BY REGION (Second Quarter)



Source: Refiners' Submissions
to the National Energy Board

4. PIPELINE UTILIZATION

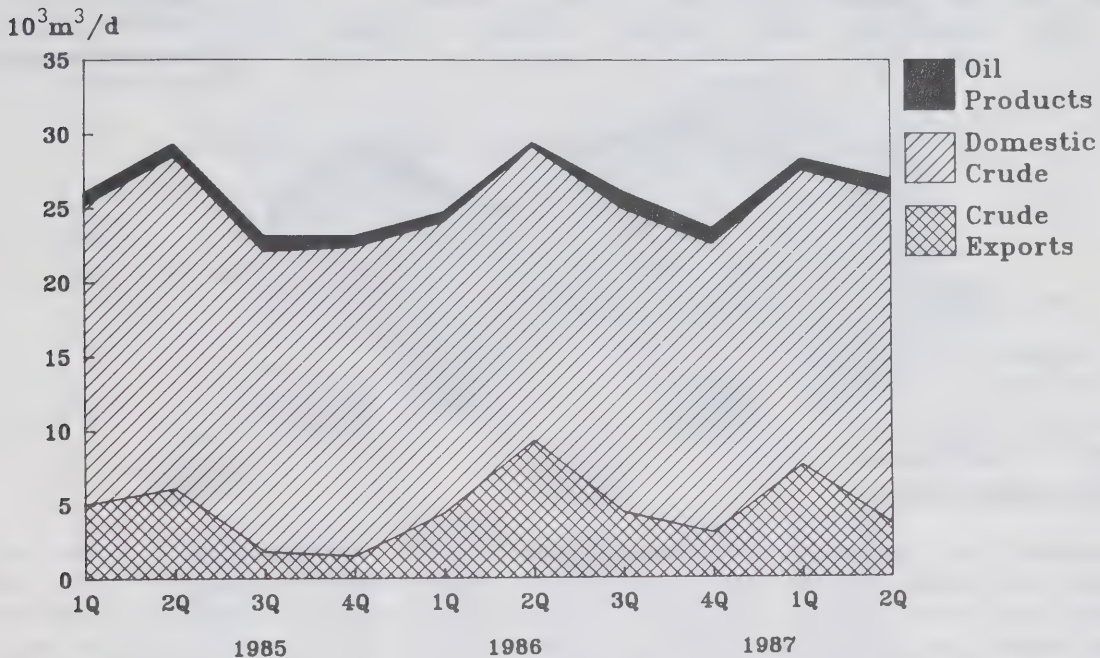
4.1 Trans Mountain Pipe Line

The Trans Mountain Pipe Line Company Ltd. was incorporated in 1951 by a Special Act of Parliament. Its crude oil pipeline covers 1265 kilometres from Edmonton, Alberta to Burnaby, British Columbia and to northern Washington state. Pipeline deliveries reached a peak in 1973 at close to $61 \times 10^3 \text{ m}^3/\text{d}$, of which 67% were exports to the United States. As a result of declining productive capacity and light crude export restrictions, the exported volume decreased until the 1980's. In 1983 pipeline utilization was less than half of potential. As a result of capacity reductions, for the most part reductions in pumping power, operating capacity is currently about $31 \times 10^3 \text{ m}^3/\text{d}$.

In 1986, total deliveries were $26 \times 10^3 \text{ m}^3/\text{d}$ (roughly 84% of capacity) of which 77% was received at Vancouver, 3% at Kamloops and the balance of 20%, exported. The exports were split 70/30 between pipeline deliveries to Washington state, and offshore shipments of both light and heavy crude to the U.S. Gulf Coast and Pacific Rim countries.

In the first quarter of this year deliveries were higher at over $29 \times 10^3 \text{ m}^3/\text{d}$, with exports accounting for 25% of shipments. Although April 1987 movements reached $30.5 \times 10^3 \text{ m}^3/\text{d}$, the second quarter averaged $26 \times 10^3 \text{ m}^3/\text{d}$, reflecting lower exports. Over the last year the pipeline utilization rate has varied from 75% to 100%.

TRANS MOUNTAIN PIPE LINE DELIVERIES



Source: Trans Mountain

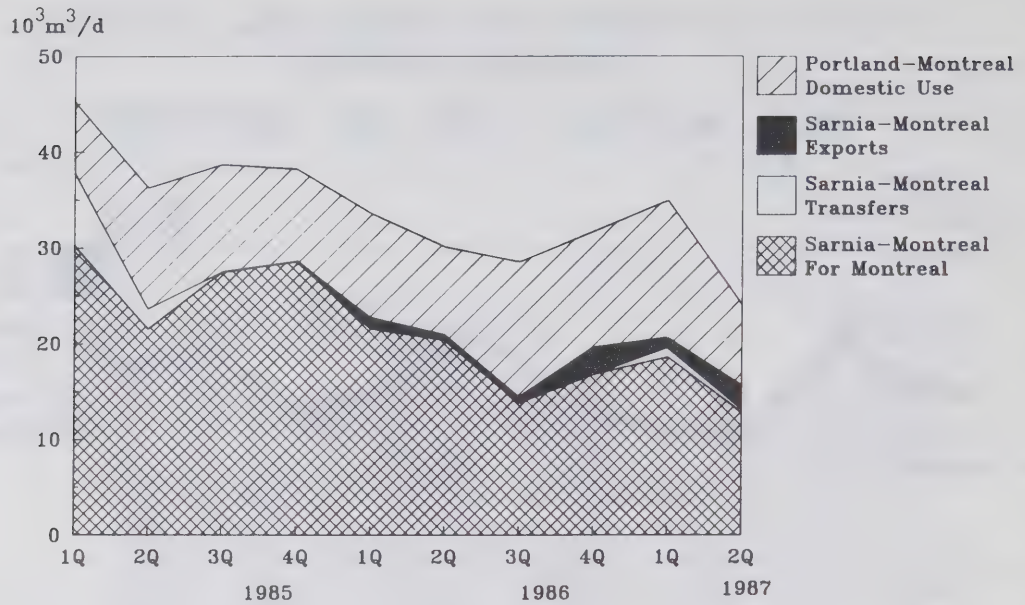
4.2 Pipelines to Montreal

Domestic crude oil and equivalent deliveries via the Sarnia-Montreal pipeline fell to just less than $16 \times 10^3 \text{ m}^3/\text{d}$ in the second quarter of 1987, which was a decline of more than $5 \times 10^3 \text{ m}^3/\text{d}$ compared with the second quarter of 1986. Imports, on the other hand, were down by only $1 \times 10^3 \text{ m}^3/\text{d}$, to $8 \times 10^3 \text{ m}^3/\text{d}$ from the level in the year-earlier period.

About $13 \times 10^3 \text{ m}^3/\text{d}$ of the Sarnia-Montreal deliveries were to Montreal refiners, a decline of more than $7 \times 10^3 \text{ m}^3/\text{d}$, on a year-over-year basis. A drop of 20% in crude run to stills (reflecting a longer-than-usual period of repairs and maintenance), and a drawdown of both crude and product inventories (after a significant build in the first quarter) explained most of the drop in domestic receipts at Montreal. An increase in transshipments for export and to refiners east of Montreal partially offset the reduced demand by Montreal refiners. Total Montreal transshipments were about $3 \times 10^3 \text{ m}^3/\text{d}$, an increase of $2.5 \times 10^3 \text{ m}^3/\text{d}$.

Interprovincial Pipeline throughput on the Sarnia-Montreal extension was made up of light crude (60%), partially processed oil (10%), and heavy crude (30%).

CRUDE OIL DELIVERIES TO MONTREAL

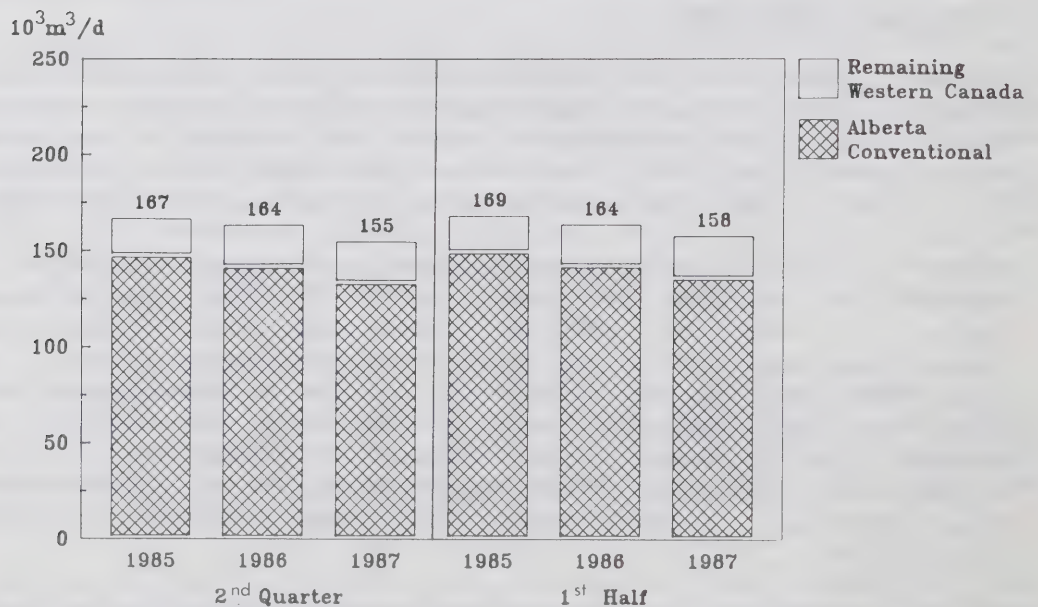


Source: Energy, Mines and Resources Canada and Interprovincial Pipeline

5. Available Supply

Productive capacity of conventional light and medium crude oil in Western Canada continued to decline in the second quarter of 1987, falling 5% from the second quarter of 1986. Productive capacity outside of Alberta was virtually unchanged at 22 10³m³/d indicating that the bulk of the decrease, caused by the natural decline in existing reservoirs and a lack of significant new discoveries, continues to be in Alberta.

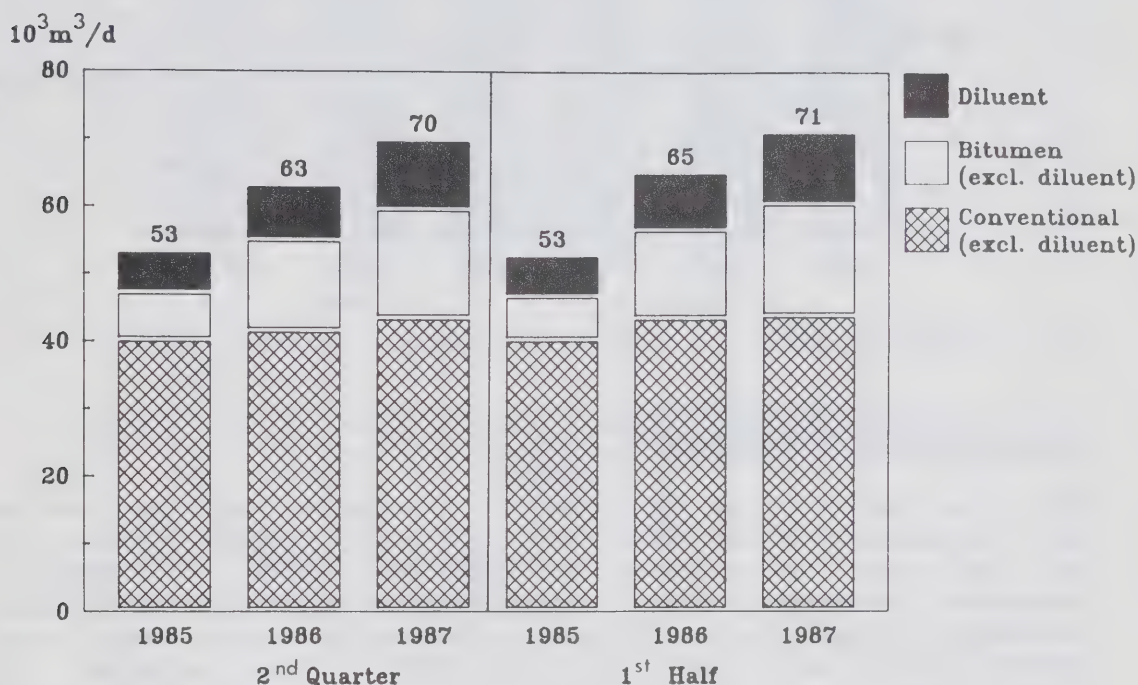
CONVENTIONAL LIGHT AND MEDIUM CRUDE OIL PRODUCTIVE CAPACITY



Source: National Energy Board

Total overall blended heavy crude oil capacity for the second quarter of 1987 stood at $70 \text{ } 10^3 \text{ m}^3/\text{d}$, a $7 \text{ } 10^3 \text{ m}^3/\text{d}$ (11%) increase from the previous year. It should be noted, however, that almost half of the increased capacity represents diluent used to make the bitumen and heavy crude transportable in pipelines. Unblended conventional heavy crude oil productive capacity increased marginally, to $43 \text{ } 10^3 \text{ m}^3/\text{d}$ from $41 \text{ } 10^3 \text{ m}^3/\text{d}$ last year. Bitumen capacity also continued to increase averaging $16 \text{ } 10^3 \text{ m}^3/\text{d}$, up $2.7 \text{ } 10^3 \text{ m}^3/\text{d}$ (20%) from the same time a year earlier.

HEAVY CRUDE OIL PRODUCTIVE CAPACITY



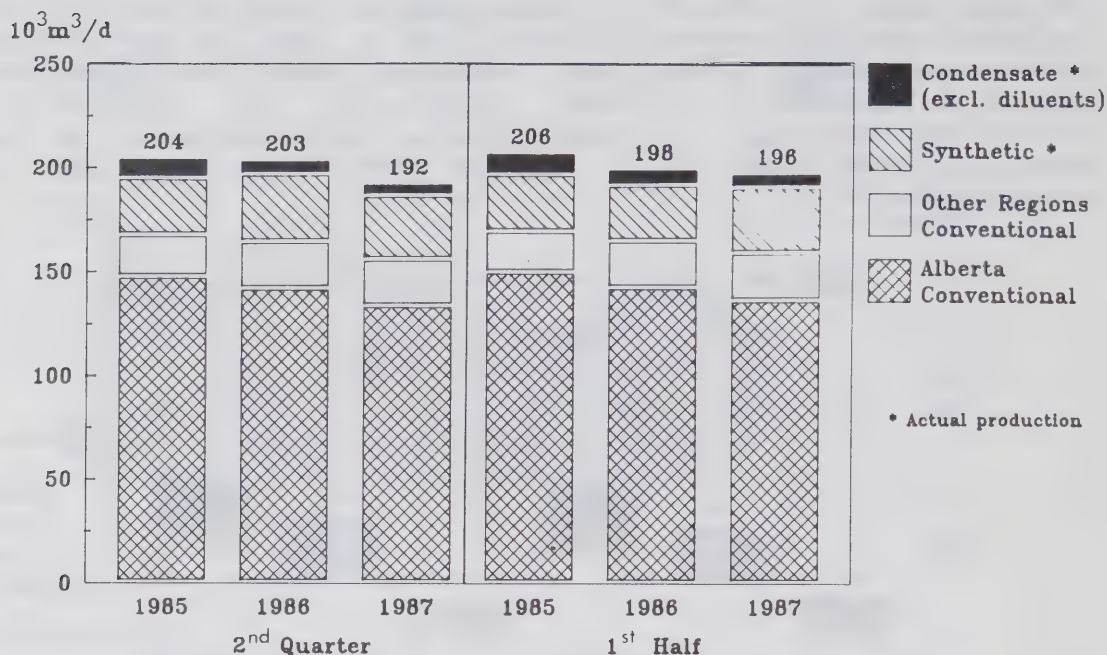
Source: National Energy Board

Condensate supply grew marginally, to $16 \text{ } 10^3 \text{ m}^3/\text{d}$, however diluent requirements (including recycled of $0.8 \text{ } 10^3 \text{ m}^3/\text{d}$) increased by almost $3 \text{ } 10^3 \text{ m}^3/\text{d}$, to $11 \text{ } 10^3 \text{ m}^3/\text{d}$, from the corresponding quarter of 1986. There were some condensate supply shortfalls during May, resulting in cancellation of a few blended crude shipments. This shortfall was attributable to road usage restrictions associated with the spring thaw.

Total synthetic production from the plants in northern Alberta averaged close to $31 \text{ } 10^3 \text{ m}^3/\text{d}$ in the second quarter of 1987, slightly less than the same period in 1986. Suncor's output increased marginally to $10 \text{ } 10^3 \text{ m}^3/\text{d}$, whereas production at Syncrude was down, to $21 \text{ } 10^3 \text{ m}^3/\text{d}$, from $23 \text{ } 10^3 \text{ m}^3/\text{d}$ in 1986. The drop was primarily the result of a coker turnaround which was not completed until late April.

Available supply of all domestic crude oils, including production of synthetic crude and condensate, declined $5 \text{ } 10^3 \text{ m}^3/\text{d}$, to $261 \text{ } 10^3 \text{ m}^3/\text{d}$, as the slide in conventional light crude productive capacity exceeded the increase in heavy crude supply.

TOTAL LIGHT CRUDE OIL AND EQUIVALENT AVAILABLE SUPPLY



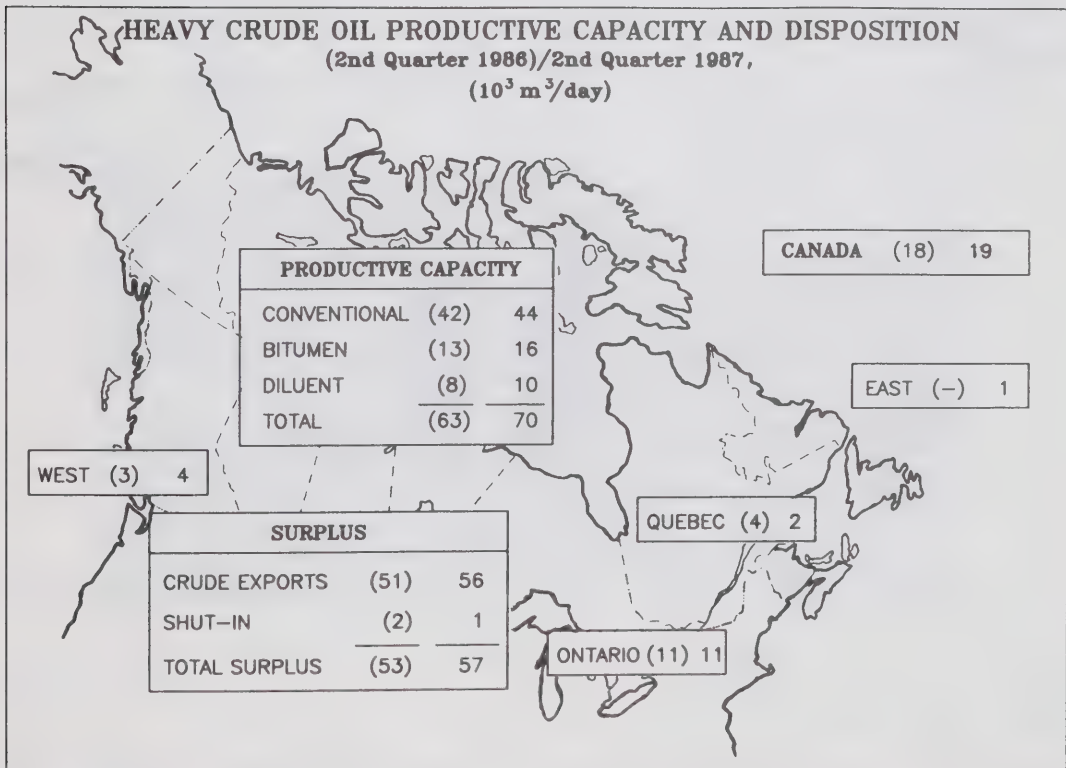
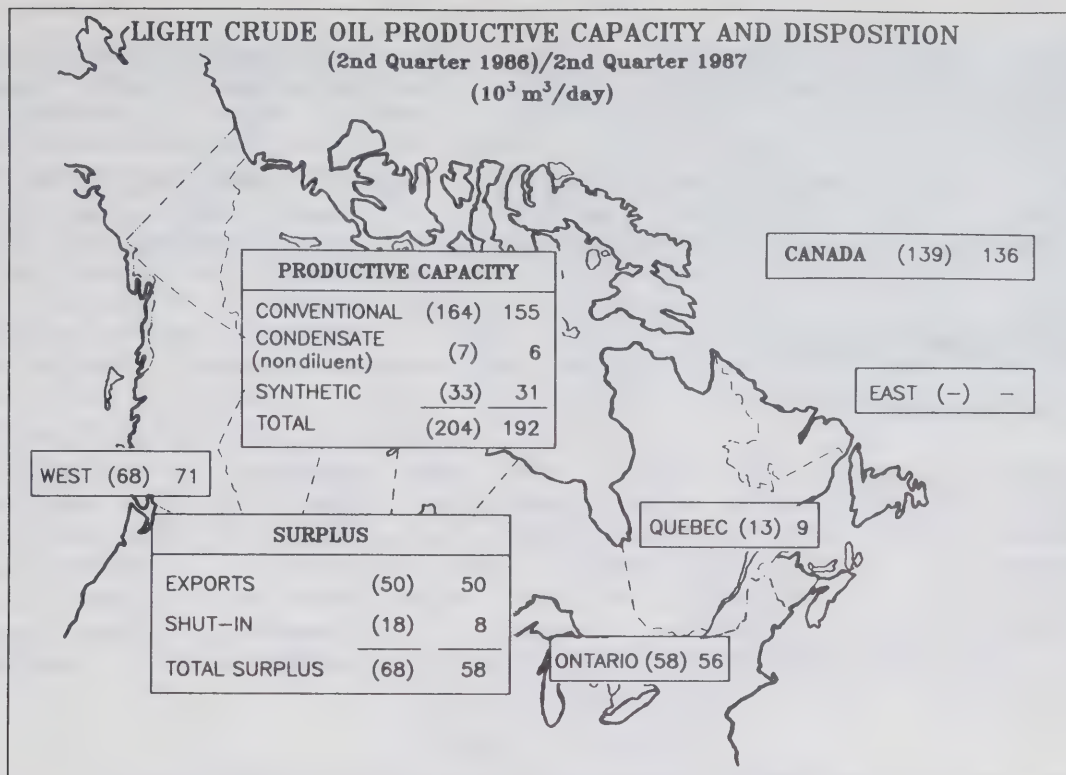
Source: National Energy Board

6. PRODUCTION AND DISPOSITION

With the completion of the Phase II Interprovincial Pipe Line expansion and the expectation that there would be enough pipeline capacity available by the summer to transport all available crude, the Alberta Energy Resources Conservation Board, in conjunction with an industry task force, announced changes to the Alberta conventional light crude prorationing system, which would make the system more market oriented. Effective June 1, 1987, for a trial period of seven months, a "modified prorationing system" will be tried. As long as an industry-supported base demand of $95 \times 10^3 \text{ m}^3/\text{d}$ was maintained, the industry can negotiate for the remaining available light crude (30 to $35 \times 10^3 \text{ m}^3/\text{d}$) unfettered by the threat of provincial prorationing of supply to meet demand. The market should be more open, and theoretically, only less efficient crude marketers would have shut-in capacity.

The results for the first month under the new system were supportive of the objective, since a light crude shut-in level of only $4.5 \times 10^3 \text{ m}^3/\text{d}$ was reported in June, the lowest monthly shut-in since May 1985. Despite the fact that light crude oil and equivalent production remained basically unchanged, on a year-over-year basis, at about $185 \times 10^3 \text{ m}^3/\text{d}$, shut-in capacity fell to $8 \times 10^3 \text{ m}^3/\text{d}$, $10 \times 10^3 \text{ m}^3/\text{d}$ less than in the same period a year earlier. This improvement reflected for the most part, the decline in conventional light crude capacity in Alberta.

Supplementary sales of Alberta light crude ended on June 1, 1987 with the introduction of the new prorationing system. Total supplementary sales during the second quarter were $6 \times 10^3 \text{ m}^3/\text{d}$ versus $7 \times 10^3 \text{ m}^3/\text{d}$ in 1986. Sales in April and May were made to both domestic and export markets, whereas they had been limited to the export market in 1986 and the first quarter of 1987.



SOURCE: National Energy Board

Note: Difference between productive capacity and disposition attributed to stock change.

Overall light crude sales to export markets were unchanged while domestic sales declined marginally. Most of the incremental heavy crude was exported.

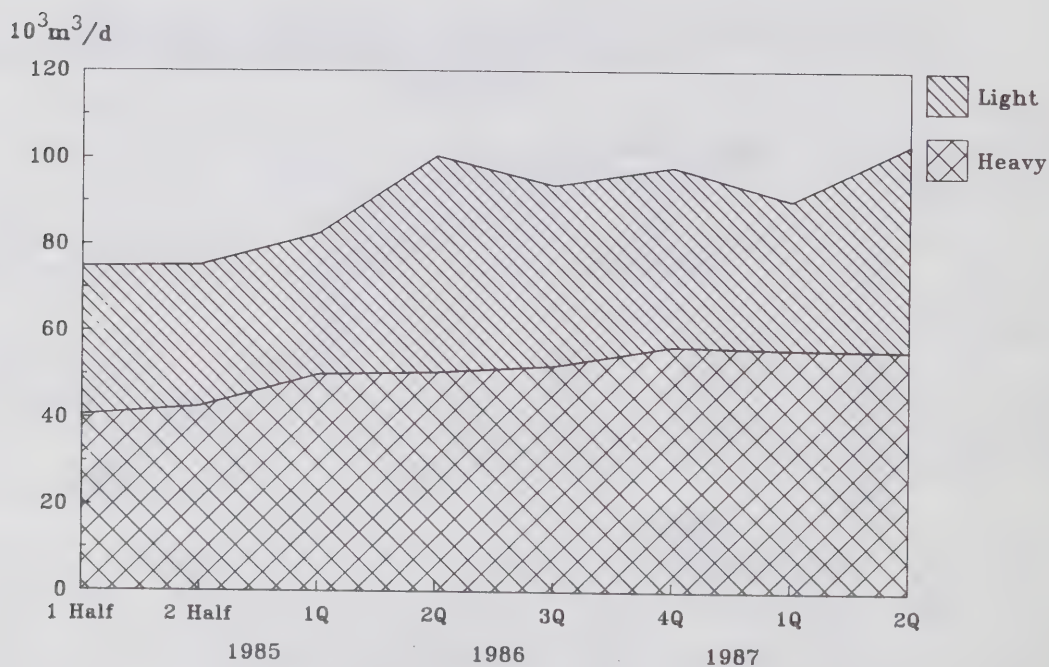
Heavy crude production was virtually at capacity resulting in negligible shut-in during the second quarter. As a result, shut-in was only $0.9 \times 10^3 \text{ m}^3/\text{d}$ in the first half of 1987, versus $4.8 \times 10^3 \text{ m}^3/\text{d}$ in 1986.

7. EXPORTS AND IMPORTS

7.1 Crude Oil Exports

Crude oil exports in June of 1987 were estimated at $113 \times 10^3 \text{ m}^3/\text{d}$, or about 43% of domestic crude production. Exports in June were at the highest level since the early 1970s. As a result of the jump in June, exports in the second quarter were $107 \times 10^3 \text{ m}^3/\text{d}$, $7 \times 10^3 \text{ m}^3/\text{d}$ greater than in the second quarter of 1986. Heavy crude exports were up almost $7 \times 10^3 \text{ m}^3/\text{d}$, to $57 \times 10^3 \text{ m}^3/\text{d}$, because of incremental bitumen capacity and pipeline capacity additions. Light crude exports remained at $50 \times 10^3 \text{ m}^3/\text{d}$.

LIGHT AND HEAVY CRUDE OIL EXPORTS

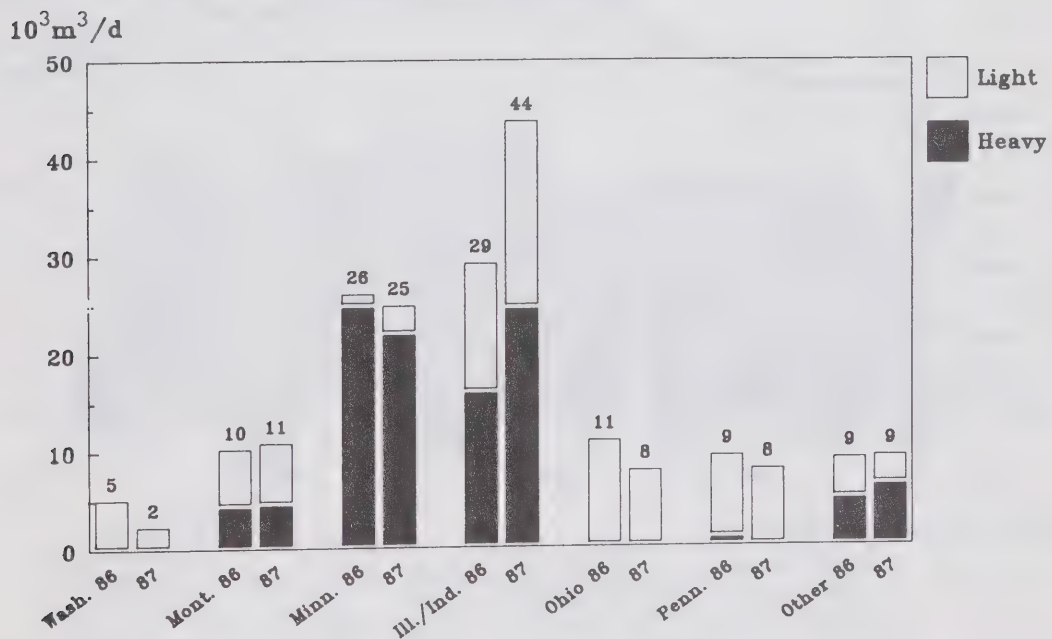


Source: National Energy Board

A small but significant volume of largely heavy crude oil exports via the ports of Montreal and Vancouver continued throughout the second quarter, as producers sought market diversification. About $4 \times 10^3 \text{ m}^3/\text{d}$ of exports were shipped from these ports, mainly for destinations on the U.S. Gulf and east coasts, with some sales to Asia and Europe.

Within the United States, pipeline-connected exports are concentrated in the mid-west, particularly in the state of Minnesota and the Chicago area. About 75 to 80% of exports of heavy crude are to U.S. mid-west refiners. However exports of light crude are less concentrated. Chicago area refiners currently account for roughly 40% of Canadian light crude exports, with refiners in the states of Pennsylvania, Ohio, Montana and Washington accounting for much of the balance.

LIGHT AND HEAVY CRUDE OIL EXPORTS BY DESTINATIONS (Second Quarter)



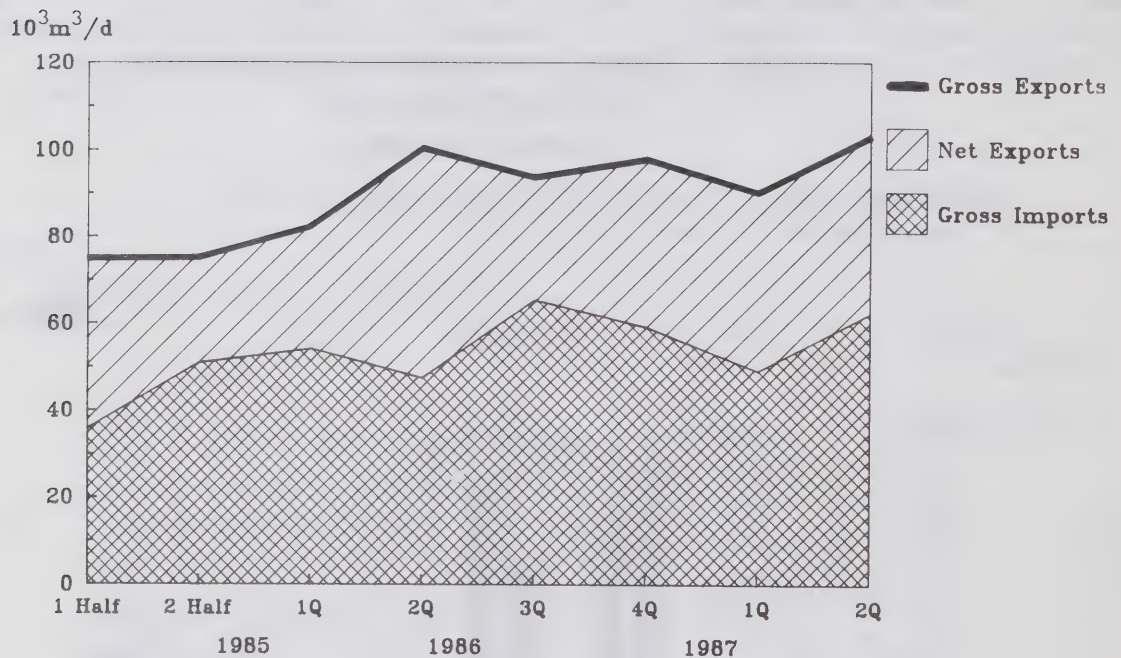
Source: National Energy Board

7.2 Crude Oil Imports

Gross crude oil imports for the second quarter were $52 \text{ } 10^3 \text{ m}^3/\text{d}$, $4 \text{ } 10^3 \text{ m}^3/\text{d}$ higher than in the same quarter of 1986. During the first half of 1987 crude imports were $57 \text{ } 10^3 \text{ m}^3/\text{d}$, compared with $52 \text{ } 10^3 \text{ m}^3/\text{d}$ in the first half of 1986.

As a result of increased petroleum products exports and stable product imports, Canada's oil import dependence*, expressed as a percentage of domestic oil consumption, remained at 20% in the second quarter of 1987, about the same as in 1986.

CRUDE OIL EXPORTS AND IMPORTS



Source: National Energy Board

7.3 Petroleum Products Trade

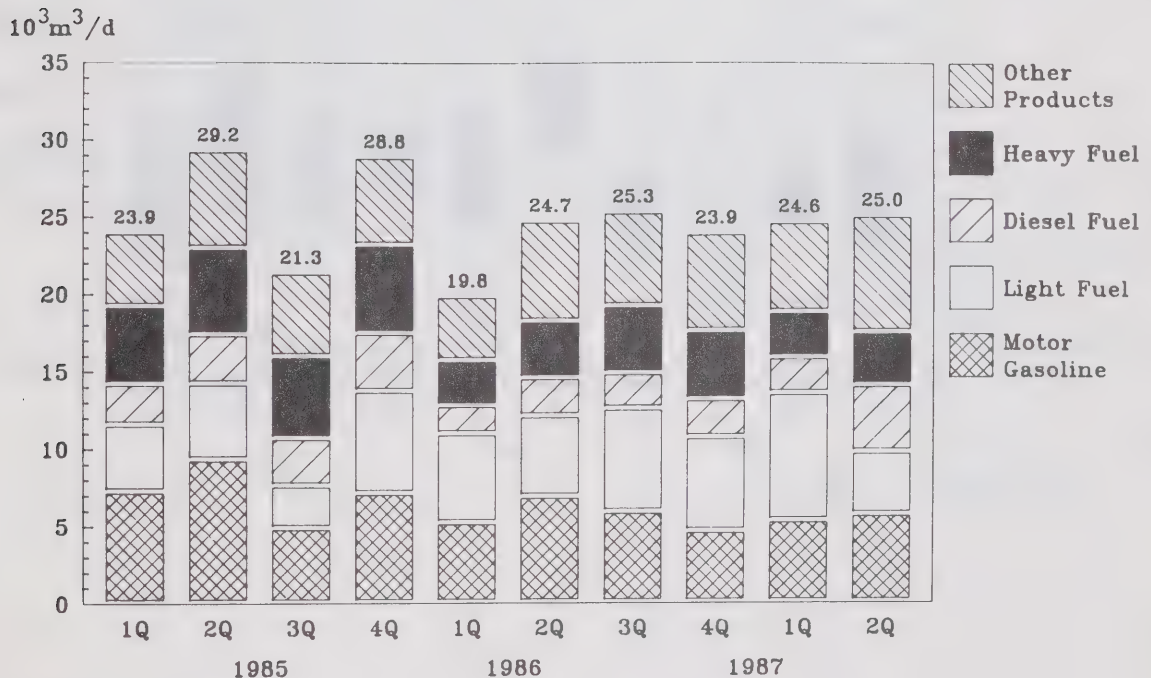
The Canadian trade surplus in oil products was maintained in the second quarter as product exports exceeded imports by close to $8 \text{ } 10^3 \text{ m}^3/\text{d}$, an improvement of $2 \text{ } 10^3 \text{ m}^3/\text{d}$ over the same quarter in 1986 and $3 \text{ } 10^3 \text{ m}^3/\text{d}$ over the previous quarter. Gross exports have remained constant at about $24 \text{ } 10^3 \text{ m}^3/\text{d}$, since the second quarter of 1986, while product imports have averaged about $19 \text{ } 10^3 \text{ m}^3/\text{d}$, with a range of 17 to $20 \text{ } 10^3 \text{ m}^3/\text{d}$.

* Crude oil imports less net refined oil product exports

While total product exports have remained relatively level since early 1986 at about $24 \times 10^3 \text{ m}^3/\text{d}$, the composition tends to shift reflecting regional supply/demand imbalances. During this period the two most significant products exported were light fuel oil at $7 \times 10^3 \text{ m}^3/\text{d}$, followed by motor gasoline, at slightly less than $6 \times 10^3 \text{ m}^3/\text{d}$. On a year-over-year basis, the gasoline export share fell from 28% to 23% of the total, while light fuel oil dropped 5 percentage points to 16%.

The largest gain was jet fuel which accounted for 2% of total imports in early 1986 but has increased to 11% in 1987, explaining most of the increase in the other products category. (This category, which accounts for 25% of the total, includes jet fuel (11%), LPG's (5%), petrochemical feedstocks (4%) and naphtha (4%)). Diesel fuel exports were also up sharply (7 percentage points to 17%) as compared with the second quarter of last year.

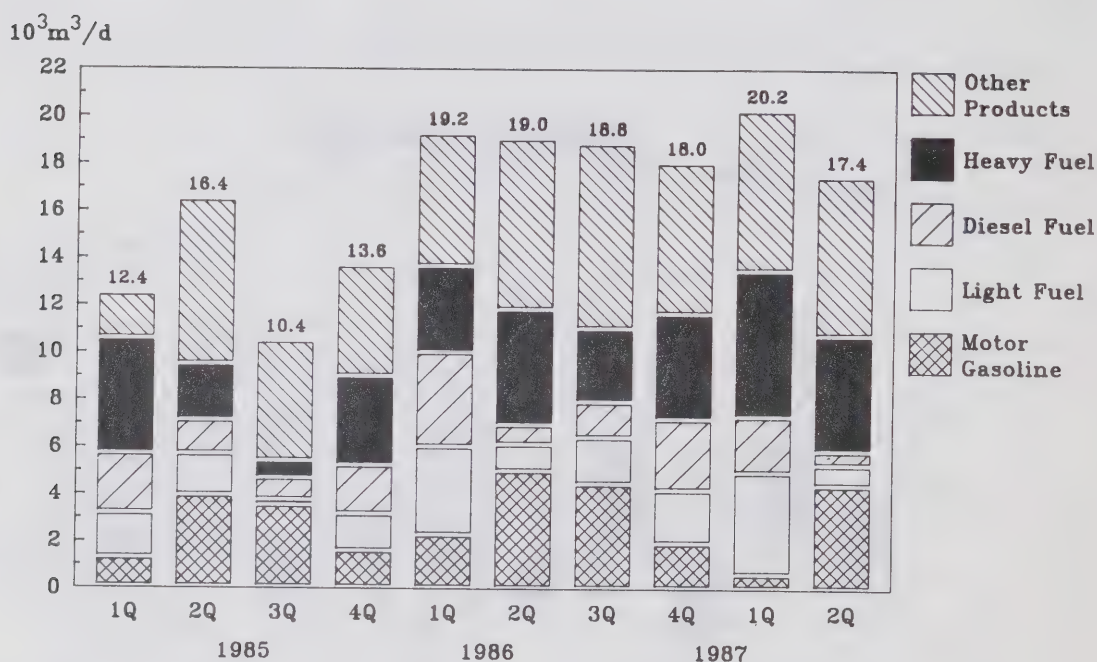
PRODUCT EXPORTS



Source: Statistics Canada

Imports of petroleum products have averaged around $19 \times 10^3 \text{ m}^3/\text{d}$ since the beginning of 1986, but fell off to $17 \times 10^3 \text{ m}^3/\text{d}$ in the second quarter. Heavy fuel oil and motor gasoline at about $5 \times 10^3 \text{ m}^3/\text{d}$ each accounted for more than half of the total. Imports of heavy fuel oil in the first half of 1987 were bolstered by additional requirements in the Atlantic region for electricity generation to offset lower hydro power availability. The largest component of the other products category was petroleum coke representing about 10% of overall product imports. Much of the coke imports are used in the steel industry.

PRODUCT IMPORTS



Source: Statistics Canada

8. COMPOSITION OF CRUDE OIL IMPORTS

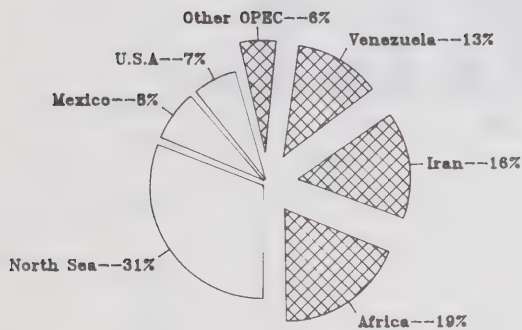
In 1987, second-quarter crude oil imports reached $52 \text{ } 10^3 \text{ m}^3/\text{d}$, up by 8% from 1986, but down 16% ($10 \text{ } 10^3 \text{ m}^3/\text{d}$) from the first quarter of 1987. As in the first quarter, North Sea crudes continued to account for the majority of imports because of competitive spot market prices. Of the total, almost 60% originated from the North Sea ($31 \text{ } 10^3 \text{ m}^3/\text{d}$), representing an increase of 120% from the second quarter of 1986.

OPEC imports averaged $15 \text{ } 10^3 \text{ m}^3/\text{d}$, with most originating from Venezuela and Africa. Iran, which had exported $8 \text{ } 10^3 \text{ m}^3/\text{d}$ of crude to Canada in the second quarter of 1986, did not deliver any in 1987.

Mexico and the United States provided 6 and 4% respectively of Canadian imports, for a total of $5 \text{ } 10^3 \text{ m}^3/\text{d}$ both down sharply from last year.

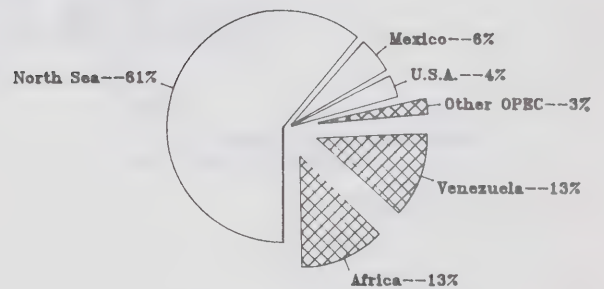
SOURCES OF CRUDE OIL IMPORTS (Second Quarter)

1986



TOTAL $47.4 \text{ } 10^3 \text{ m}^3/\text{d}$
Non-OPEC 46% OPEC 54%

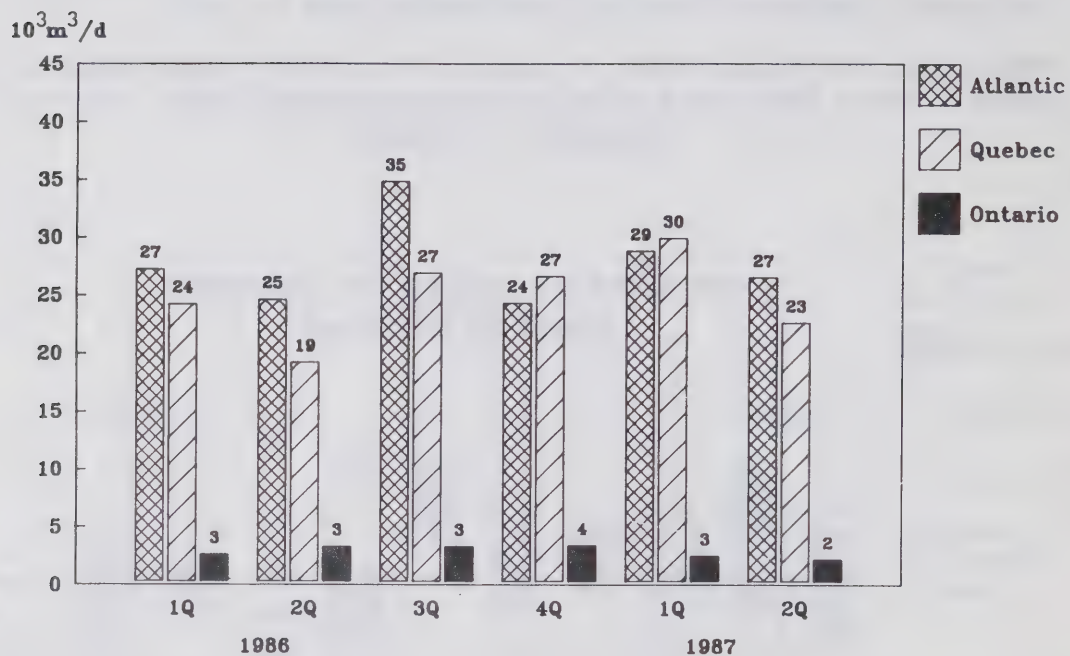
1987



TOTAL $51.7 \text{ } 10^3 \text{ m}^3/\text{d}$
Non-OPEC 71% OPEC 29%

On a regional basis, the Atlantic provinces registered an increase of almost 8% in crude imports, to $27 \times 10^3 \text{ m}^3/\text{d}$, which represented 98% of total refinery receipts in that region. Imports in Quebec rose by 18%, to represent 73% of receipts, up from 53% in 1986. Ontario, by contrast, reduced its imports to $2.3 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL IMPORTS BY REGION



Source: Refiners' Submissions
to the National Energy Board.

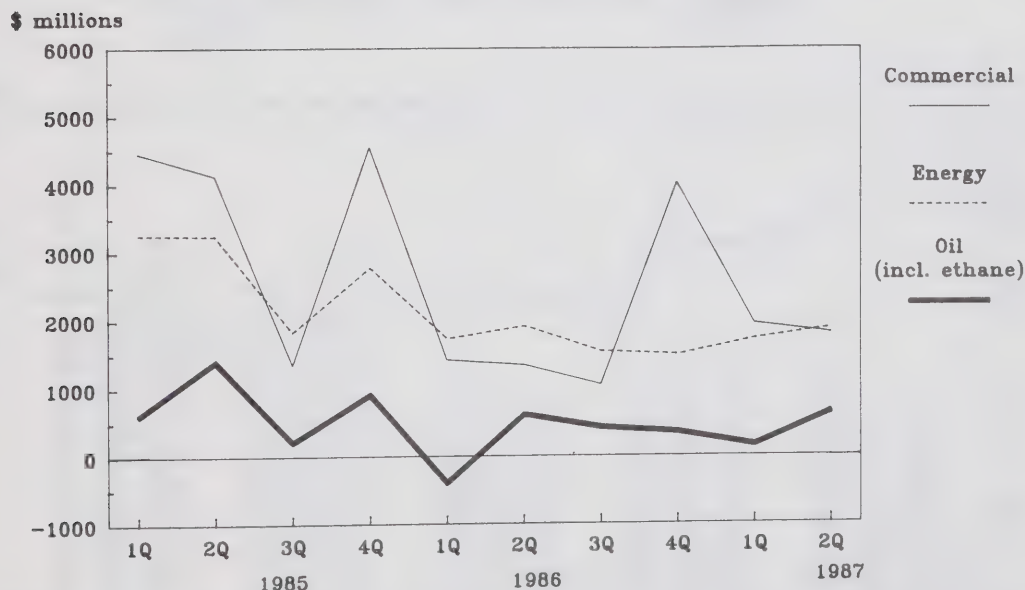
9. ENERGY TRADE BALANCE

Canada's oil trade surplus jumped by half a billion dollars during the second quarter of 1987 to a net balance of \$650 million, reflecting the seasonal upswing in crude exports, and a decline in crude imports*. On a year-over-year basis, the current surplus was greater by \$40 million, however the relative contribution of crude and product trade shifted considerably. Petroleum product trade fell from a surplus of \$125 million in the second quarter of 1986 to a deficit of \$15 million in 1987, while the surplus in crude oil trade increased \$180 million to \$668 million.

The energy trade balance for the second quarter of 1987 fell marginally to \$1885 million, down from \$1940 million in the first quarter, and from \$1915 million a year earlier. Despite the jump in crude oil surplus, most of the surpluses in other energy sources were down from the previous quarter, both in terms of volume and price, in part, reflecting seasonal fluctuations. On a year-over-year basis, the crude balance increased significantly, while natural gas and LPG's were up slightly and the coal surplus fell \$250 million.

As result of a continued decline in the overall trade balance in the second quarter, the energy trade balance exceeded the total for the entire economy once again.

OIL AND ENERGY TRADE BALANCE (Quarterly)



Source: Statistics Canada

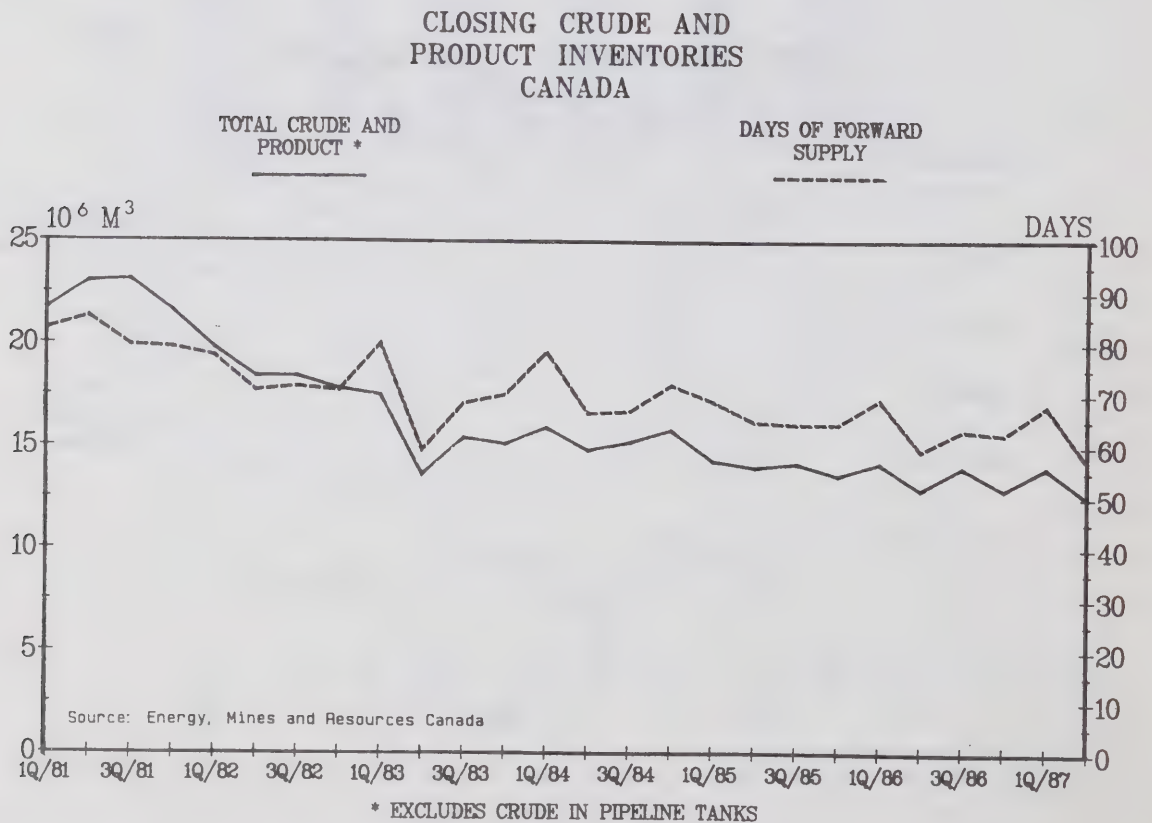
* The trade figures referred to in this section are derived from customs documents by Statistics Canada and tend to differ from other sources used for volumetric flows because of timing and valuation differences.

10. STOCKS

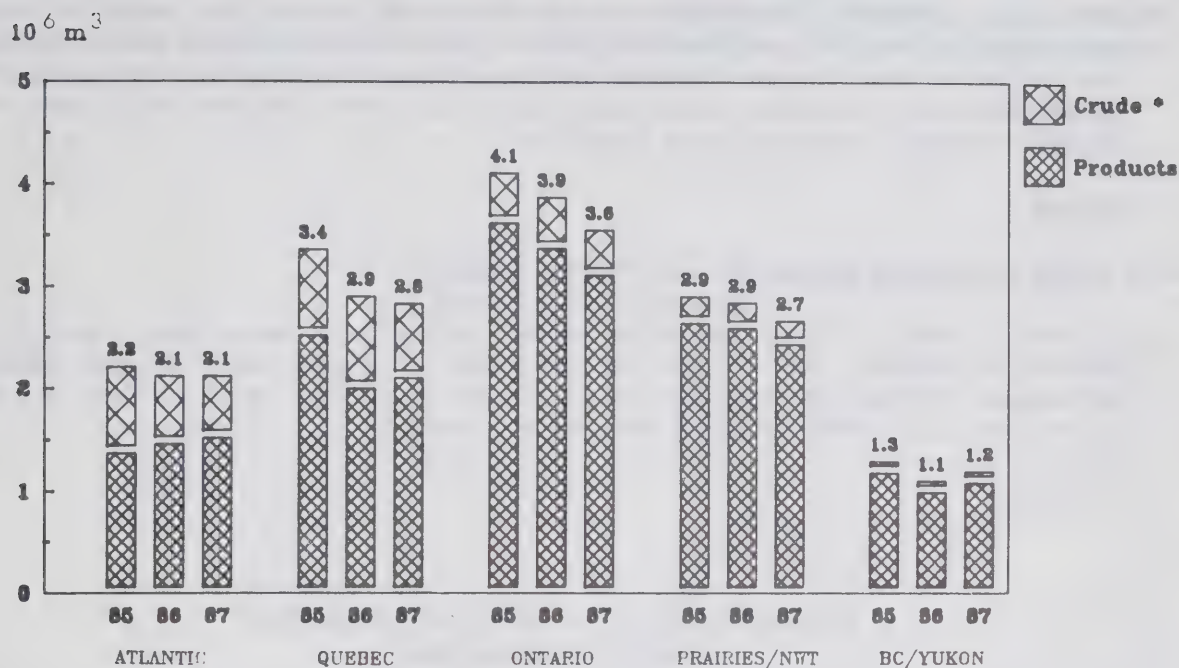
The trend to lower petroleum product stocks continued during the first half of 1987, albeit at a slower pace in the second quarter. At the end of June 1987 product inventories were 10.3 million cubic metres, compared with 10.5 million cubic metres on June 30, 1986. As in the past refiners drew down stocks in the second quarter, coincidental with refinery maintenance programs. Days of forward supply for total Canada, as of the beginning of July 1987, were down 6 days from a year earlier, to 47 days.

Refiners also drew down crude oil inventories at refineries during the second quarter, at the rate of $3 \times 10^3 \text{ m}^3/\text{d}$, to a closing level of 2.1 million cubic metres. Closing stocks were down more than 13% (300,000 cubic metres) compared with June 1986. In product demand terms, days of forward consumption stood at about 11 days at the end of June.

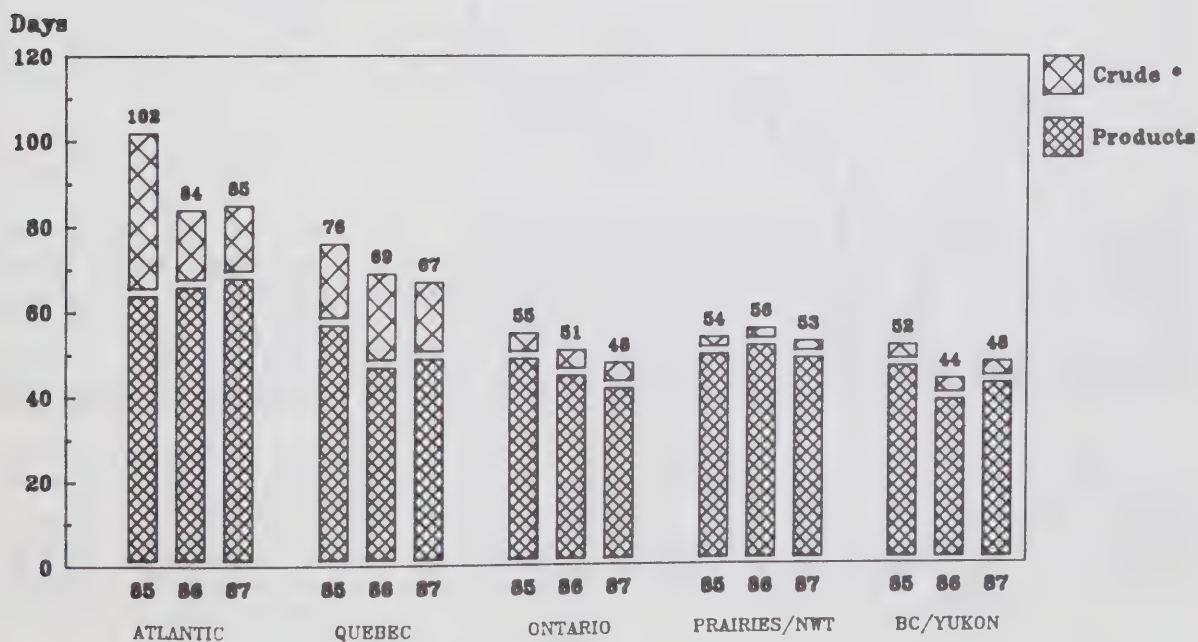
Including crude oil stocks held in pipeline tankage, total Canadian crude oil stocks were close to 4 million cubic metres, or about 20 days of forward consumption. Days supply of all crude oil and petroleum product commercial stocks were therefore estimated at 67 days at the end of June, which is 7 days less than International Energy Agency average of 74 (excluding government stocks).



CLOSING INVENTORIES - BY REGION JUNE



DAYS OF FORWARD SUPPLY



Source: Statistics Canada

* excludes crude in pipeline tankage

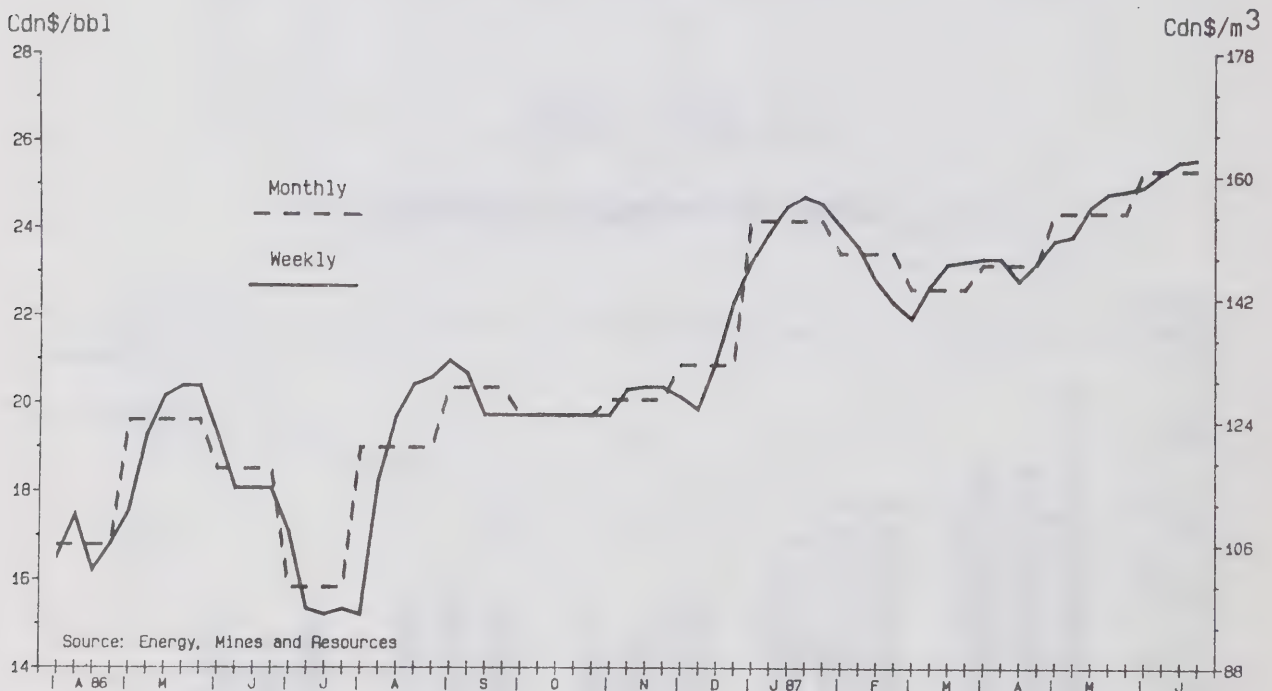
On a regional basis, the largest declines in total stocks (excluding crude stocks in pipeline tankage, which are difficult to attribute to any particular region), both in terms of absolute stocks and days of supply, have been in Ontario and the Prairies. Days of supply are the greatest in the Atlantic and Quebec, mainly because these regions are more dependent on water-borne imported crude oil, than the other regions of Canada which receive domestic crude oil by pipeline.

11. PRICES

11.1 Light and Heavy Crude Oil

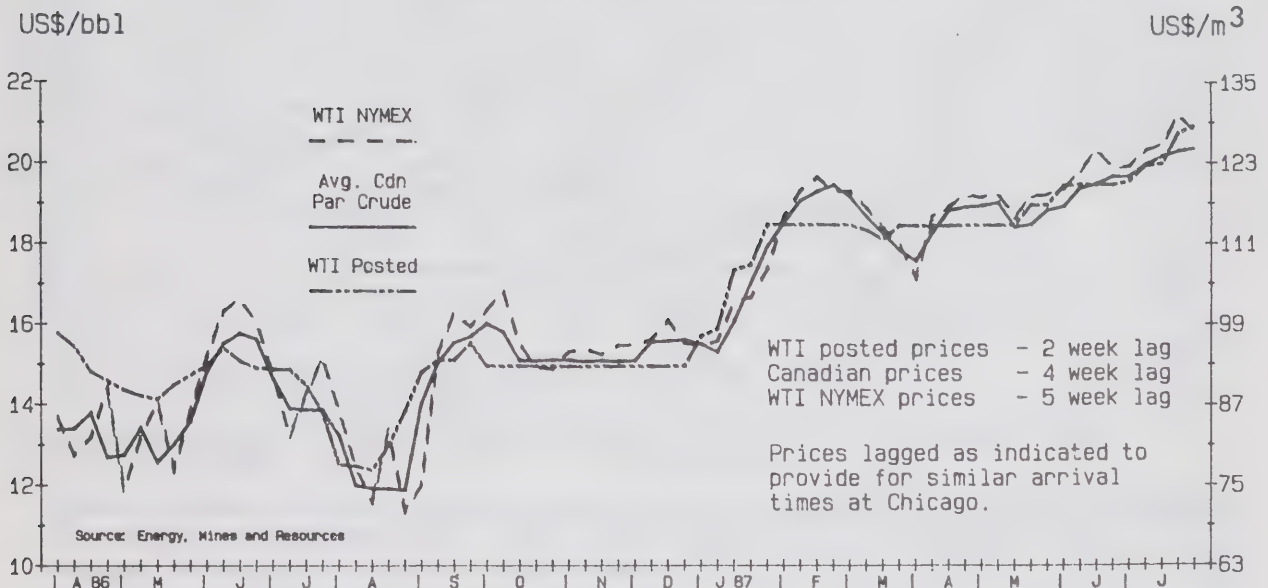
In early April, light Canadian crude oil prices were about \$23.35 per barrel decreasing to \$22.80 by mid-month. Thereafter, prices steadily increased throughout the second quarter. At the end of the quarter, prices had increased to about \$25.60 per barrel.

Edmonton Light Crude Postings 40'API, <0.5% Sulphur



Canadian light crude oil prices continue to follow the trend set by international crudes, primarily the U.S. benchmark crude, West Texas Intermediate (WTI). The following graph illustrates the close relationship between prices for WTI and Canadian crude after adjustments for delivery times to Chicago.

Light Crude Oil Delivered To Chicago

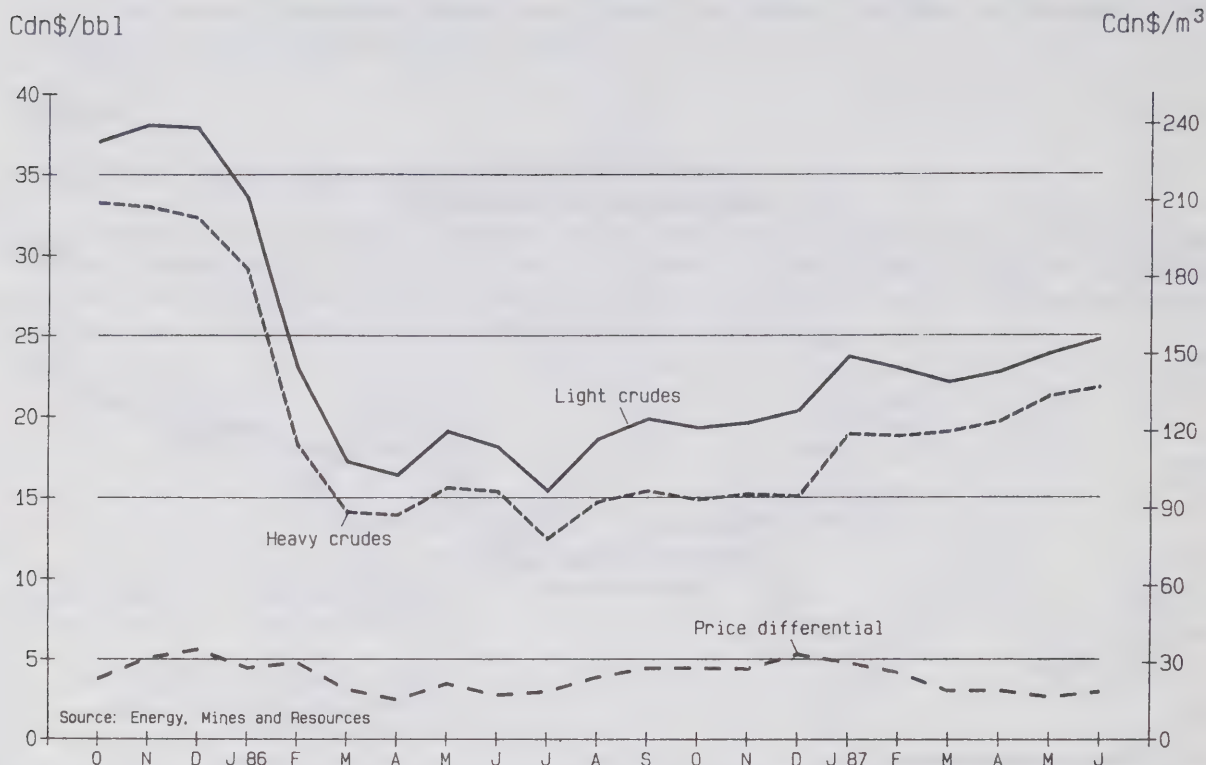


The graph on the next page compares actual prices for domestic light and heavy crude oil, purchased for use in Canada at main trunk line injection stations. On average, light crude oil quality during the second quarter of 1987 was 38.1°API, 0.4% sulfur and heavy crude was 24.3°API, 2.6% sulfur. The variation in the price differential shown at the bottom of the graph is largely explained by the influence of seasonal demand factors.

The differential between Canadian light and heavy crude prices during the second quarter was about \$3.00 per barrel. This low differential, relative to the fall and winter months, is attributed to the onset of the asphalt season and the corresponding seasonal increase in heavy crude prices. The second quarter of 1987 differentials were very similar to those of one year ago.

Comparison of Domestic Light and Heavy Crudes

Actual Purchase Prices

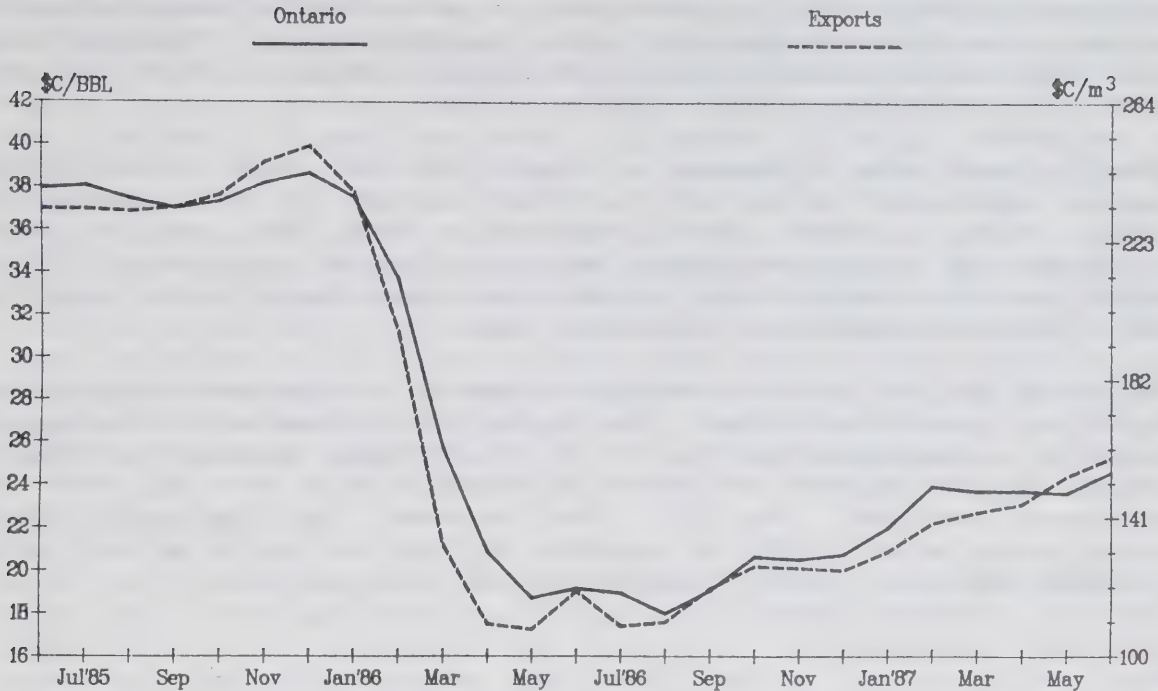


11.2 Light Crude Oil Values: Export Versus Domestic

In May 1987, for the first time since early 1986, the gap between Ontario light crude prices and export values was reversed in favour of Ontario refiners. In June the gap narrowed, from \$0.80 to \$0.65 per barrel but remained in favour of Ontario for the second consecutive month. In line with rising crude prices, both domestic and export crude oil prices increased, by approximately \$0.90 and \$2.60 per barrel, respectively to \$24.65 and \$25.30 per barrel by the end of the second quarter.

Several factors may have contributed to the apparent turnaround in comparative domestic/export prices. From the first quarter to the second quarter of the year there was a significant shift in exports from relatively low priced destinations, including the states of Montana and Washington, to higher-priced markets in the Great Lakes region. Also the Ontario price advantage may be partially attributable to the inherent lead export prices have over domestic prices (export markets are closer to the sources of production) when crude oil prices are changing. In addition, the elimination of the supplementary sales system, coupled with the introduction of the modified prorationing system in June, may have contributed to eliminating the export price advantage.

Canadian Light Crude Export & Ontario
Domestic Acquisition Values *
(Adjusted to 38 API, 0.6% S)



* Both values adjusted for transportation cost to a common point (Ontario)

Source: Energy, Mines and Resources Canada

11.3 Product Prices

Retail prices for petroleum products increased during the second quarter of 1987, continuing the trend which started in November 1986. While average retail prices increased about 2.1¢ per litre over the quarter (see Appendix I), June 1987 prices remained about 6¢ per litre below the January 1986 level.

The gasoline price increase during the second quarter was primarily due to higher average provincial and federal sales taxes on regular leaded gasoline. In Quebec, the grade differential for gasoline taxes was eliminated, resulting in a tax increase of 0.8¢ per litre for regular leaded gasoline. Alberta re-instated the tax on gasoline which had been removed in April 1978. In a move designed to equalize the retail prices of regular leaded and regular unleaded gasolines, British Columbia imposed a 2¢ per litre surcharge on the provincial gasoline tax on leaded fuel. The intent of this change was to discourage the use of leaded gasoline in engines designed to run on unleaded fuels and, therefore, to reduce lead emissions. In addition, the Urban Transit Tax, which is levied in the greater Vancouver area, was increased by 1.55¢ to 2.5¢ per litre.

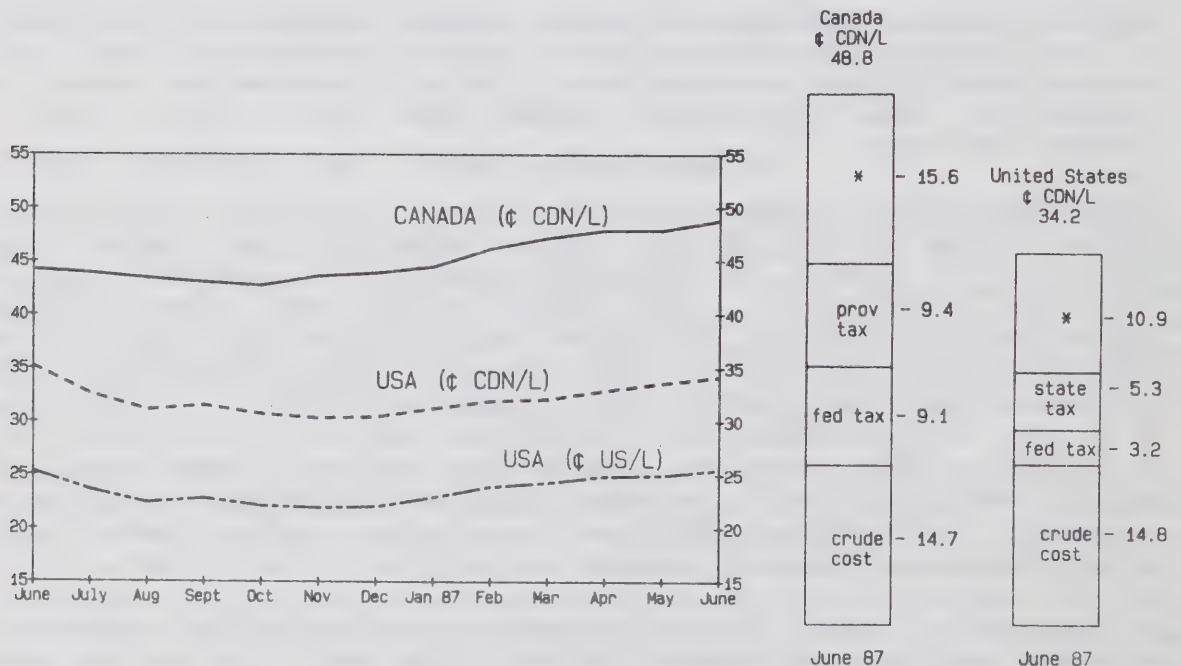
At the federal level, the sales taxes on regular unleaded and premium unleaded gasoline were reduced by about 0.3¢ per litre in the second quarter of 1987, following the quarterly review process. In the budget of February 18, 1987, the base rate used to calculate the sales tax on regular leaded gasoline was increased to the rate used for regular unleaded gasoline, effective April 1, 1987. This change produced a 0.03¢ per litre increase in the sales tax on regular leaded gasoline.

The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in a twelve month average industrial product price index for gasoline, with a one-quarter lag. The significant price declines of the first half of 1986 will continue to affect the level of the sales tax over the third quarter of 1987.

Retail diesel price increases of about 0.6¢ per litre in the second quarter contributed to the 2.6¢ per litre increase in the first half of 1987. These increases were considerably less than gasoline price increases for the corresponding periods. However, the retail diesel market represents only about 15% of total diesel sales, while more than 85% of gasoline sales are at the retail level.

The following line graph and bar charts compare average gasoline prices in Canada and the United States. The Canada line represents a major-centre weighted average gasoline price of all three grades of gasoline (regular leaded, regular unleaded and premium unleaded) sold at both full-serve and self-serve stations. The U.S. lines represent the U.S. city average retail price for all grades of gasoline, at both full-serve and self-serve stations, expressed in both Canadian and U.S. cents per litre.

Canada vs U.S. - Motor Gasoline Average Retail Price - All Grades Average Full-Serve & Self-Serve



Source: Energy, Mines and Resources Canada

* Refining and Marketing Costs and Profits

The bar charts illustrate the components of the average pump price in each country using June 1987 data. Taxes are the average of all grades. Crude costs are the average refinery acquisition costs (cost of crude received at the refinery gate) lagged by 60 days in Canada and 45 days in the United States. The refining and marketing costs and profits component is the residual revenue available to cover refining, marketing and distribution costs and to provide a return to the industry on its investment.

Gasoline prices in Canada are higher than in the United States. In June the differential between the average Canadian and U.S. prices was 14.6¢/litre, of which more than two-thirds was accounted for by higher taxes in Canada (10.0¢/litre). The larger refining and marketing costs and profits component in Canada results from structural differences between the two markets e.g. economies of scale in refining, distribution and retailing facilities favour U.S. refiners and marketers.

12. CAPITAL EXPENDITURES

Based upon a mid-year survey* of capital expenditure intentions, the upstream oil and gas industry now expects to invest about \$5.8 billion in 1987. This level represents an increase of approximately \$400 million over the level expected in the end-86 survey by Statistics Canada. Nevertheless, it still amounts to a decrease of \$600 million (about 10%) from the 1986 capital expenditures of \$6.4 billion. Higher wellhead price netbacks and drilling incentives offered by both levels of government have contributed to this improved investment outlook.

The spending intentions for petroleum refining remained unchanged at \$900 million for 1987. This represents a 24% increase over 1986 investment, and reflects expenditures being made to improve yields and to increase the output of unleaded gasoline.

Expenditures of \$650 million in the pipeline industry are expected. This represents an increase of roughly \$80 million over the intentions enumerated in the end-86 survey for this year, but still represents a reduction of about 6% from the 1986 expenditures. The phase II and III debottlenecking and expansion program of Interprovincial Pipeline in western Canada, which should be completed by the end of the year, contributed to this level of capital expenditures.

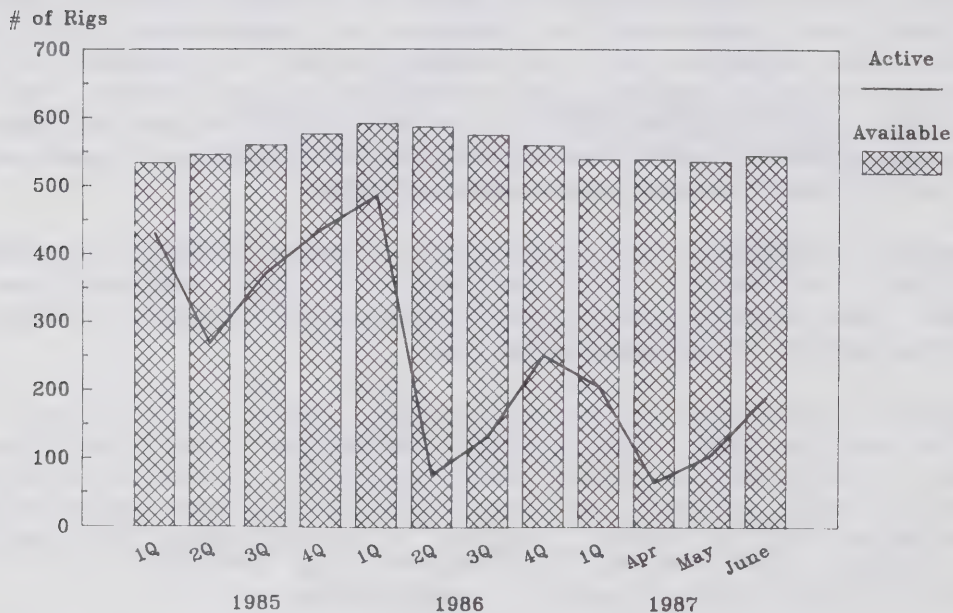
For the entire economy, expenditures in 1987 are now expected to reach almost \$134 billion, an increase of roughly 9% from the 1986 level. As a result, the share of the petroleum industry (including pipeline transport) is now expected to fall to 5.5% of the capital expenditures for the economy in 1987, from 6.4% a year earlier.

* Source: Statistics Canada, cat. no. 61-206 (includes both capital expenditures and major repairs)

13. DRILLING RIG ACTIVITY

A good indicator of industry investment confidence is the level of activity in exploration, as represented by Canadian drilling rig activity. After a steep plunge in rig activity in the second quarter of 1986, rig utilization has slowly improved. Rig utilization usually falls to its lowest level in the second quarter of the year, with lowest monthly activity occurring in April, as a result of restricted accessibility to drilling sites because of road bans associated with spring thaw. Since April 1987, there has been a pick up in rig activity in conjunction with an improvement in the crude price outlook. The average rig activity level in the second quarter of 1987 represents a 40% improvement over the same period of 1986.

CANADIAN RIG ACTIVITY



Source: Energy, Mines and Resources Canada

Appendix I

AVERAGE REGULAR LEADED GASOLINE, PRICES
FULL-SERVE AND SELF-SERVE
1986-1987

	1986 June	1986 Sept.	1986 Dec.	1987 March	1987 June	Change Last 12 Months
	(¢/litre)					(%)
St. John's (Nfld.)	51.6	49.9	50.6	53.1	52.9	2.5
Charlottetown	48.0	47.3	49.2	51.3	51.8	7.9
Halifax	46.8	46.7	48.7	50.9	47.7	1.9
Saint John (N.B.)	50.2	43.9	44.4	44.8	45.9	-8.6
Montreal	47.2	47.2	48.9	52.6	53.5	13.3
Ottawa	44.9	41.6	43.2	47.1	47.7	6.2
Toronto	40.8	38.7	40.4	42.8	44.6	10.7
Winnipeg	45.6	45.6	45.4	47.1	47.0	3.1
Regina	37.7	34.9	29.0	40.7	40.1	6.4
Calgary	36.6	36.5	36.3	39.0	43.9	19.9
Vancouver	42.7	40.0	41.0	46.1	50.3	17.8
Canadian average	42.0	40.6	41.2	44.6	46.7	11.2
Consumption taxes included:						
- Federal	7.5	7.5	7.3	9.0	9.1	21.3
- Provincial	7.7	7.3	7.2	6.8	8.4	9.1

Price Source - Statistics Canada

Appendix II

CONSUMPTION TAXES ON PETROLEUM PRODUCTS, June 1, 1987

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(%)		(\$/litre)			
Federal Taxes						
Sales *			3.55	3.55	3.65	2.94
Excise			5.5	5.5	5.5	4.0
Provincial Taxes						
Newfoundland	22	26	9.8	9.8	9.8	12.1
Prince Edward Island*	20	23	8.9	8.9	8.9	10.6
Nova Scotia*	20	21	8.3	8.3	8.3	8.7
New Brunswick*	20	23	7.7	8.2	8.6	8.3
Quebec (a)*		-	14.4	14.4	14.4	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba (b)*	-	-	8.9	8.0	8.0	9.9
Saskatchewan	-	-	-	-	-	-
Alberta*	-	-	5.0	5.0	5.0	5.0
British Columbia*	20(c)	20(c)	9.09	7.09	7.09	7.53
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories*	17	(d)	8.7	8.7	8.7	7.4

(a) Reduced by varying amounts in certain remote areas and within 20 kilometres of the provincial and U.S. border.

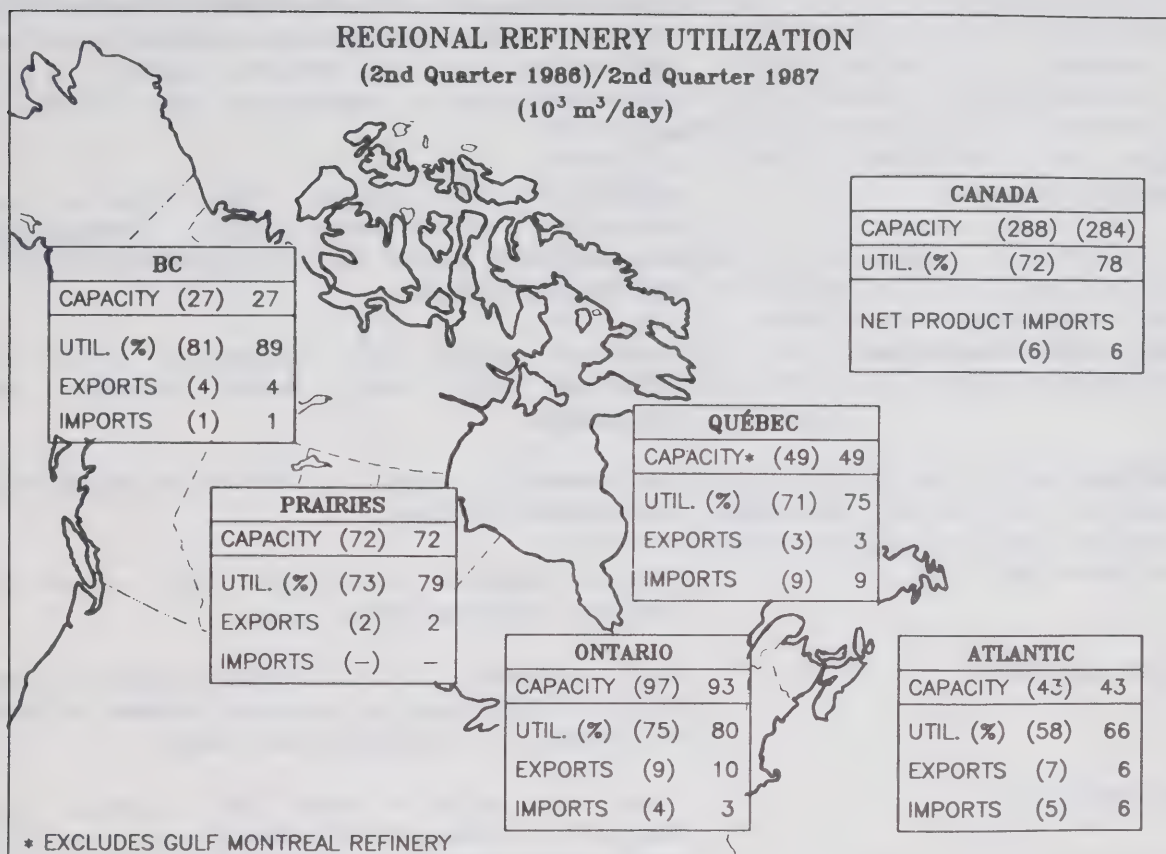
(b) Reduced by varying amounts within 60 kilometres of the border with Saskatchewan.

(c) Additional transit tax of 2.5¢ per litre in Vancouver.

(d) 85% of gasoline tax.

* Changed from last quarter

Appendix III



Source: Statistics Canada

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as condensate. A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity

Also referred to as producibility. The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

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L'Hon. Marcel Masse,
Ministre

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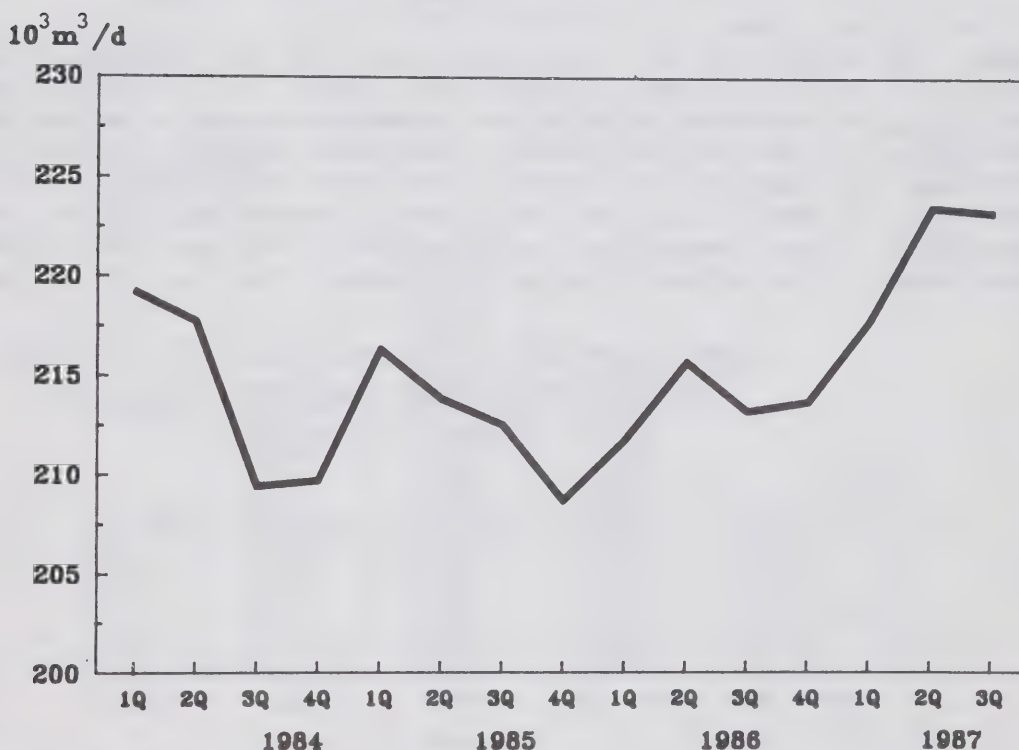
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THE CANADIAN OIL MARKET

1. DOMESTIC DEMAND

During the third quarter, seasonally adjusted petroleum consumption in Canada maintained the upward trend in evidence since the fourth quarter of 1985, but at a somewhat reduced rate of growth. After two consecutive quarters of very rapid growth, consumption declined slightly from the second quarter, to $223 \text{ } 10^3 \text{ m}^3/\text{d}$. This level nevertheless, represented a $10 \text{ } 10^3 \text{ m}^3/\text{d}$ (4.5%) improvement over the average for 1986, and reflected, in part, the growth in the economy since the beginning of the year.

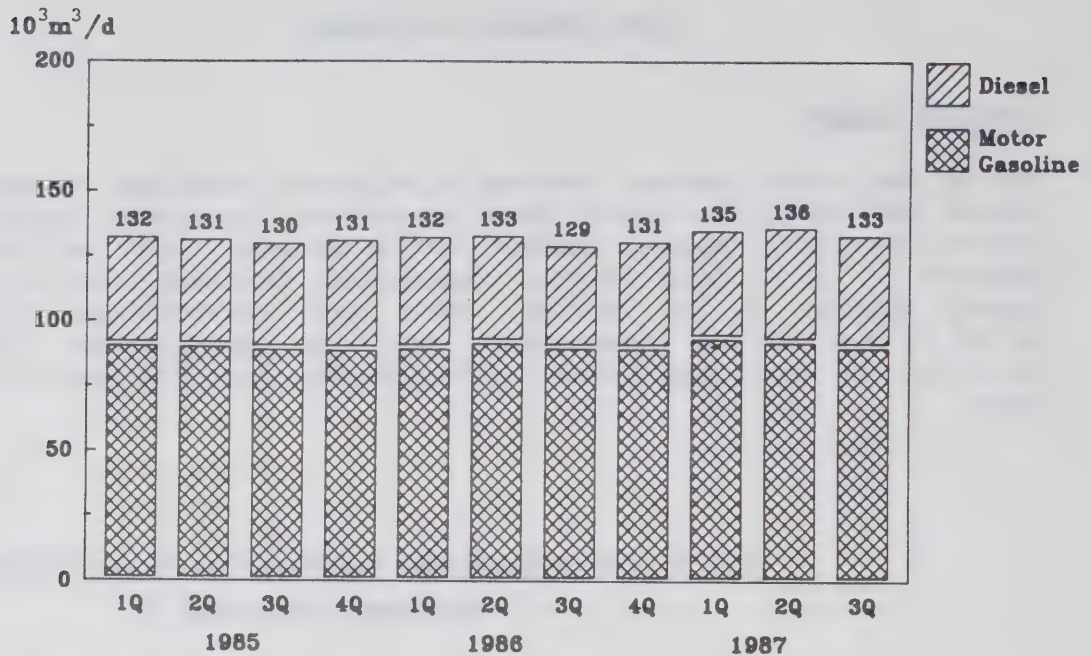
TOTAL PETROLEUM PRODUCT CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada

Among the various product components of the total, consumption of transportation fuels dropped by 1.5%, to $133 \text{ } 10^3 \text{ m}^3/\text{d}$, compared with the previous quarter. Motor gasoline demand, at $90 \text{ } 10^3 \text{ m}^3/\text{d}$, fell close to 2% from the second quarter, returning to the 1986 average level of consumption. Although diesel demand was virtually the same as in the second quarter ($43 \text{ } 10^3 \text{ m}^3/\text{d}$), it remained about 5% above the average 1986 demand, matching the pattern for the total of all products.

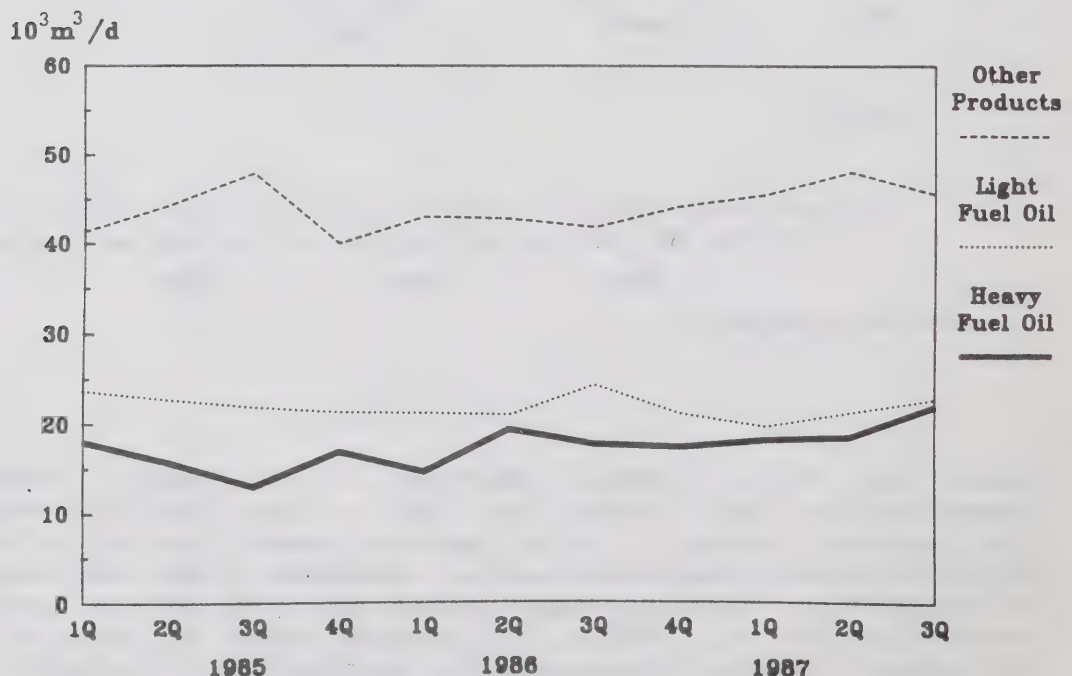
TRANSPORTATION FUEL CONSUMPTION (Seasonally Adjusted)



Source: Statistics Canada

Demand for light fuel oil (including stove oil and kerosene) rose more than 5% in the third quarter to almost 22 10³m³/d, possibly reflecting an inventory build by end consumers in anticipation of higher fuel prices in the heating season. Similarly, demand for heavy fuel oil continued to increase, up almost 13% from the second quarter. The strength in heavy fuel can be largely explained by the continued abnormally strong consumption in the Atlantic for electricity generation requirements. The Atlantic region now accounts for over 45% of the heavy

CONSUMPTION OF PETROLEUM PRODUCTS OTHER THAN FOR TRANSPORTATION* (Seasonally Adjusted)



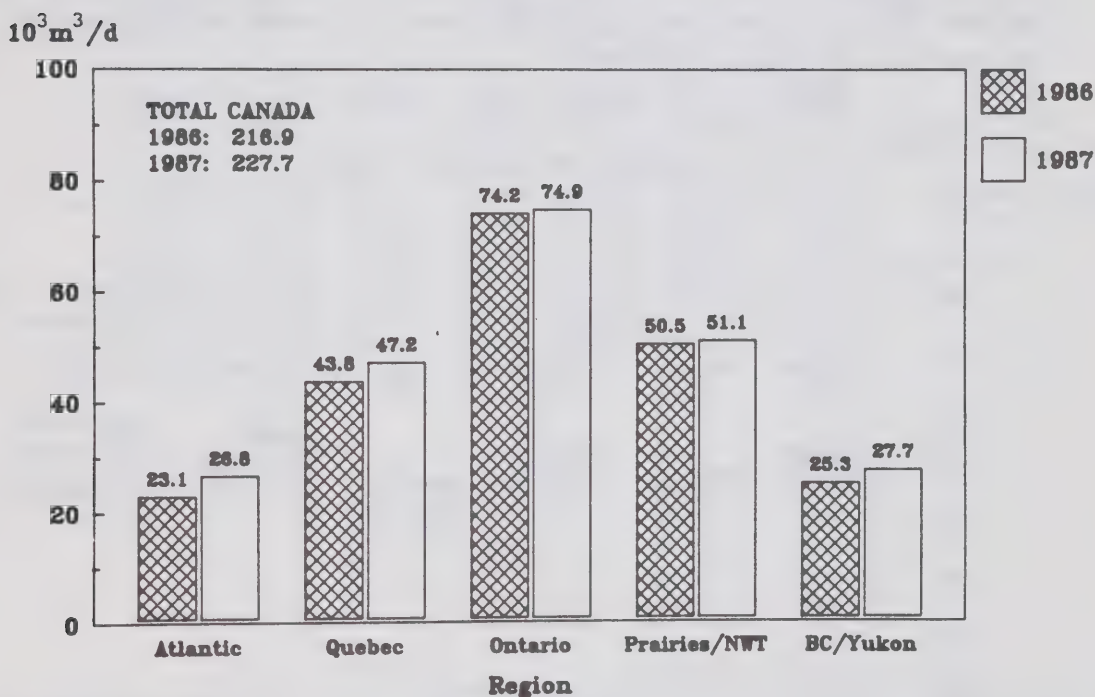
Source: Statistics Canada

* Data is non-cumulative

fuel used in Canada compared with 37% last year. Consumption of other products, which includes products such as petrochemical feedstocks, lubricating oils, jet fuels and asphalt, was down about 5% from the second quarter, to $47 \times 10^3 \text{ m}^3/\text{d}$, but still almost 9% higher than the 1986 average.

On a regional basis, all regions experienced increased consumption, compared with the same quarter of 1986. Consumption (unadjusted for seasonal change) at both ends of the country rose sharply, by 16% in the Atlantic and 9% in British Columbia, reflecting low water levels over the summer and sharp increases in consumption of other products. Quebec sales were up 7%, also largely as a result of a 25% increase in demand for other products and a 23% rise in heavy fuel oil demand. Ontario experienced only marginal growth.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Third Quarter)



Source: Statistics Canada

On the international scene, it is estimated that third quarter gasoline sales grew in most Organization for Economic and Cooperative Development markets, although at a slower rate than in the first half. This was especially true in Canada and the United States. Overall sales of heavy fuel oil declined in most European markets and in the United States, while Canada continued to experience increases, due to the abnormally high requirements for power generation and, to a lesser extent, some switching back from alternative fuels.

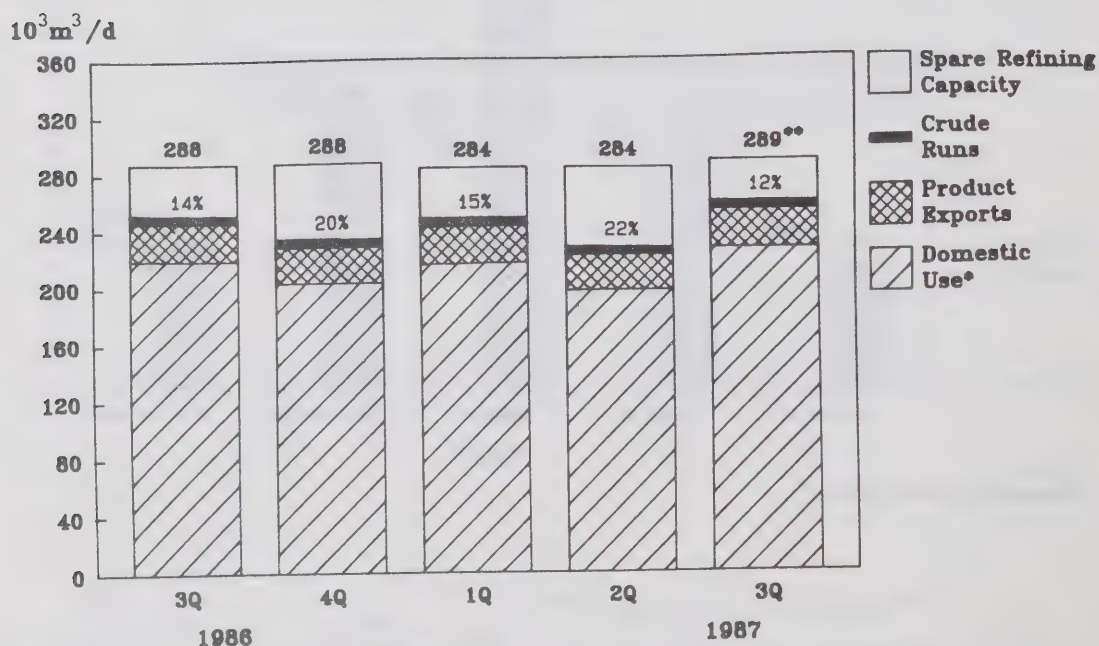
2. REFINERY UTILIZATION*

During the third quarter of 1987, crude and equivalent run to stills were $255 \text{ } 10^3\text{m}^3/\text{d}$, an increase of $12 \text{ } 10^3\text{m}^3/\text{d}$ (5%) over the same period in 1986. The additional runs contributed to the product sales increase of about $9 \text{ } 10^3\text{m}^3/\text{d}$ and a product inventory build $2 \text{ } 10^3\text{m}^3/\text{d}$ higher than last year.

As a result of the additional throughput, the effective utilization of refining capacity on a national basis increased to 88%, close to 4 percentage points higher than the rate experienced during the third quarter of 1986. On a regional basis, utilization increased in the Atlantic (3 percentage points) to 77% (including one month of processing at Come By Chance, Newfoundland); in Quebec (6 percentage points) to 94%; and, in British Columbia (8 percentage points), to 93%. Refinery utilization was also up, by almost 5 percentage points, to 90% in Ontario. However most of the increase was as a result of a drop in refining capacity.

The reactivated Come By Chance refinery in Newfoundland reopened in September 1987 after an 11 year shutdown. The refinery was purchased to operate mainly under a processing agreement with an independant product marketer in the U.S. northeast.

REFINERY UTILIZATION



Source: Statistics Canada

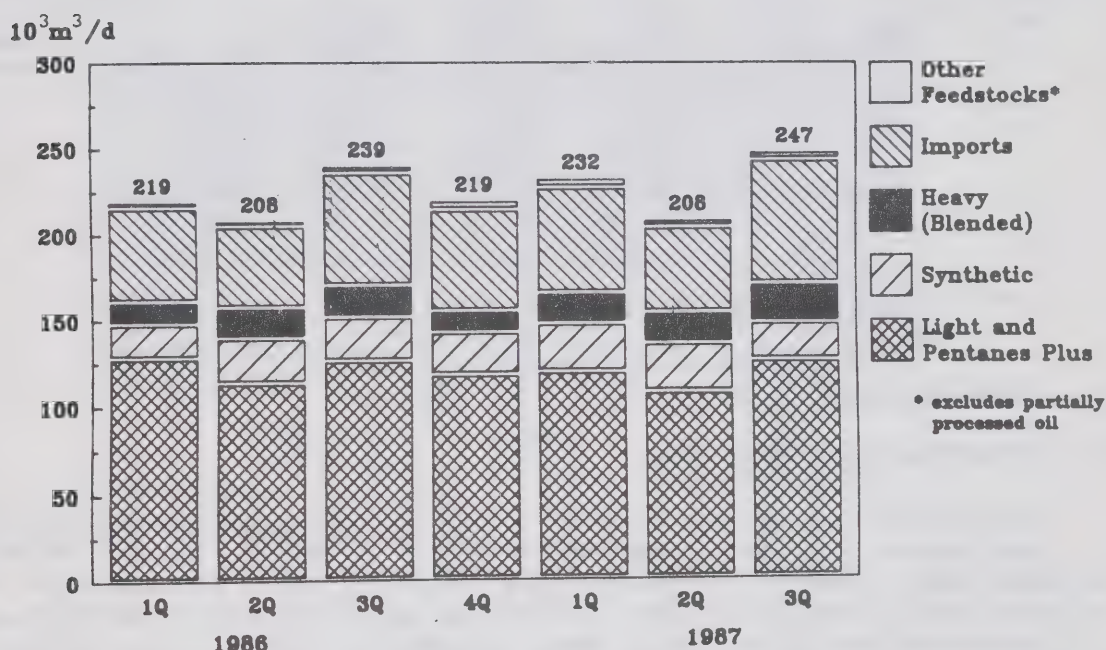
* Adjusted for refinery gain
 ** Includes Come-By-Chance refinery which reopened in September

* Calculated based on annual calendar day refining capacity, i.e. adjusted for downtime for planned refinery maintenance programs.

3. CRUDE OIL RECEIPTS

Crude oil receipts* at Canadian refineries during the third quarter of 1987 were 247 10³m³/d, 3% higher (8 10³m³/d) than the same period in 1986. Receipts of domestic light crude and equivalent fell about 4 10³m³/d, to 152 10³m³/d, however domestic heavy crude oil demand jumped sharply, up 26% to almost 23 10³m³/d. Imports also rose, from 65 10³m³/d to 72 10³m³/d.

CRUDE OIL AND EQUIVALENT RECEIPTS AT CANADIAN REFINERIES

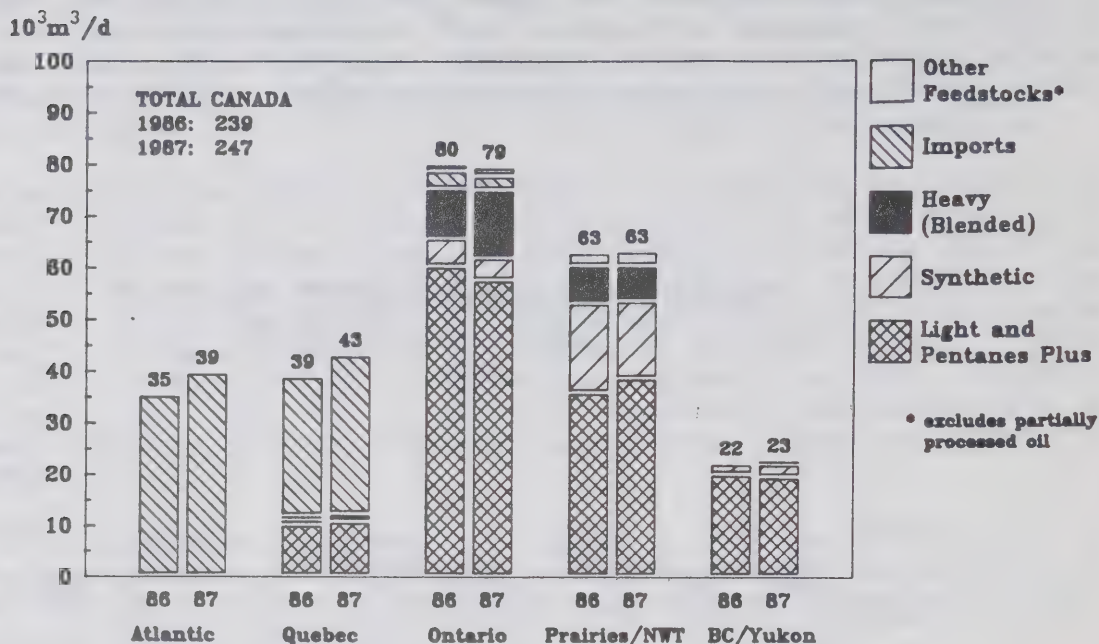


Source: Refiners' Submissions
to the National Energy Board

On a regional basis, the largest year-over-year changes were in the Quebec and Atlantic regions, where total refinery receipts increased 12% and 10%, respectively. In the Atlantic, part of the additional receipts (3 10³m³/d) went to supply higher crude runs (including the Come-by-Chance refinery), while the balance was used to build inventories. In Quebec, crude inventories remained unchanged, whereas in 1986 there had been a large drawdown. Ontario accounted for a large share of the increased heavy crude oil deliveries, which served to offset reduced receipts of light crude oil.

* Including gas plant butanes and other feedstocks, but excluding partially processed product.

CRUDE OIL AND EQUIVALENT RECEIPTS BY REGION (Third Quarter)



Source: Refiners' Submissions
to the National Energy Board

4. PIPELINE UTILIZATION

4.1 Trans Mountain Pipe Line

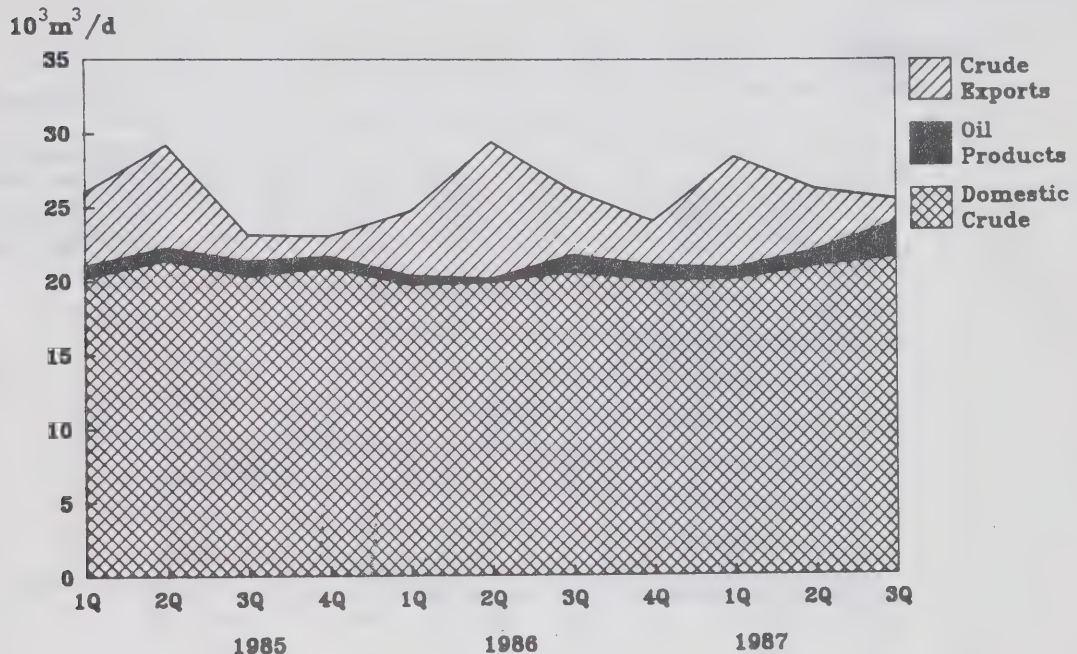
Deliveries of crude oil by Trans Mountain Pipe Line to Canadian refineries increased marginally, to $21 \times 10^3 \text{ m}^3/\text{d}$, in the third quarter of 1987, from just over $20 \times 10^3 \text{ m}^3/\text{d}$ a year earlier, but remained virtually unchanged from the second quarter. Deliveries of petroleum products continued their upward trend, reaching $2.4 \times 10^3 \text{ m}^3/\text{d}$, or more than double the deliveries from a year earlier, and triple the level of the second quarter. This outcome is largely due to the construction of a new product terminal in central British Columbia that became operational in June. Throughput in the third quarter was at approximately 85% of pipeline capacity.

Exports of Canadian crude oil through the Trans Mountain Pipe Line system fell to their lowest level since the third quarter of 1985, averaging less than $2 \times 10^3 \text{ m}^3/\text{d}$. This compares with deliveries of over $3 \times 10^3 \text{ m}^3/\text{d}$ in the second quarter and $4.4 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter of 1986. While the third quarter drop was consistent with previous years, it was also influenced by the Interprovincial Pipe Line (IPL) capacity expansion. With Canadian producer netbacks generally higher in the U.S. market east of the Rockies, sales into the lower-priced U.S. west coast market declined, commensurate with the increase in IPL capacity.

In September, Trans Mountain Pipe Line submitted an application to the National Energy Board for a major expansion of its system. The expansion would occur in two stages over two years. The first stage would be primarily aimed at increasing heavy crude movements, on the assumption

that heavy crude producers would continue to look for market diversification and expansion into Pacific rim markets. The second stage would provide for future movements of methanol and methyl-tertiary-butyl-ether (MTBE - a gasoline enhancer to replace lead) and petroleum products, both of which have been increasing over the last two years.

TRANS MOUNTAIN PIPE LINE DELIVERIES



Source: Trans Mountain Pipe Line

4.2 Pipelines to Montreal

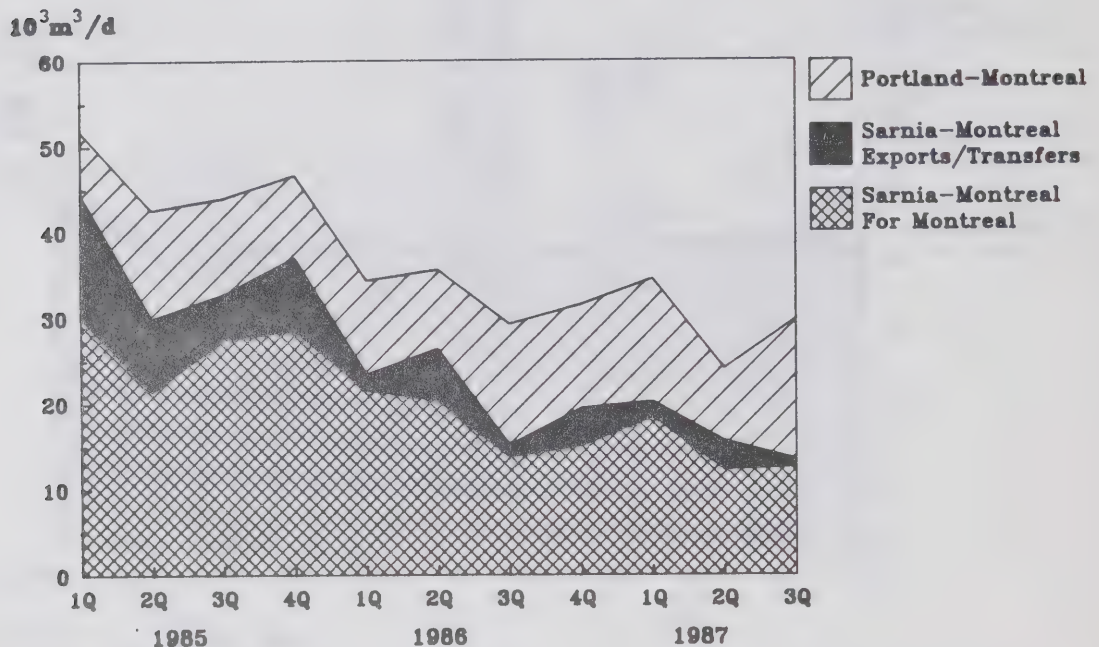
Third quarter of 1987 crude oil and equivalent deliveries to Montreal increased to 30 10³m³/d, up 3% or 1 10³m³/d from the same period in 1986. The IPL Sarnia-Montreal extension accounted for 13 10³m³/d of the total, a decrease of 2 10³m³/d from 1986, while the Portland Pipe Line system carried 17 10³m³/d, a 21% or 3 10³m³/d, increase. Portland deliveries were at the highest level since 1982 and represented a utilization rate of 55%, 8% higher than in 1986. This reflected some offshore purchase opportunities vis-à-vis Canadian crude.

The share of pipeline receipts for Montreal refiners was 12 10³m³/d of the domestic crude and all of the foreign, for a total of 29 10³m³/d, almost 2 10³m³/d more than in 1986. This reflects higher crude runs for product demand in markets served by Montreal refiners.

Effective September 1, 1987, the Interprovincial Pipe Line tolls for the movement of crude oil and natural gas liquids (NGL) were increased pursuant to a National Energy Board (NEB) decision. Light crude oil tolls were up by about 20% from the 1986 level, mainly reflecting IPL's recent pipeline expansion program. (Much of this increase had been anticipated in a January interim toll increase for 1987.) In addition, medium and heavy crude oil surcharges doubled to 10% and 30% respectively, to reflect the higher operating costs associated with

transporting those crudes. The NEB also rendered a decision respecting the toll methodology for the potential movements of NGL on the Sarnia-Montreal extension. Expenditures deemed necessary for the continued safe operation of the line would be shared by all users of the extension, whereas specific NGL conversion costs would apply only to NGL shippers.

CRUDE OIL DELIVERIES TO MONTREAL



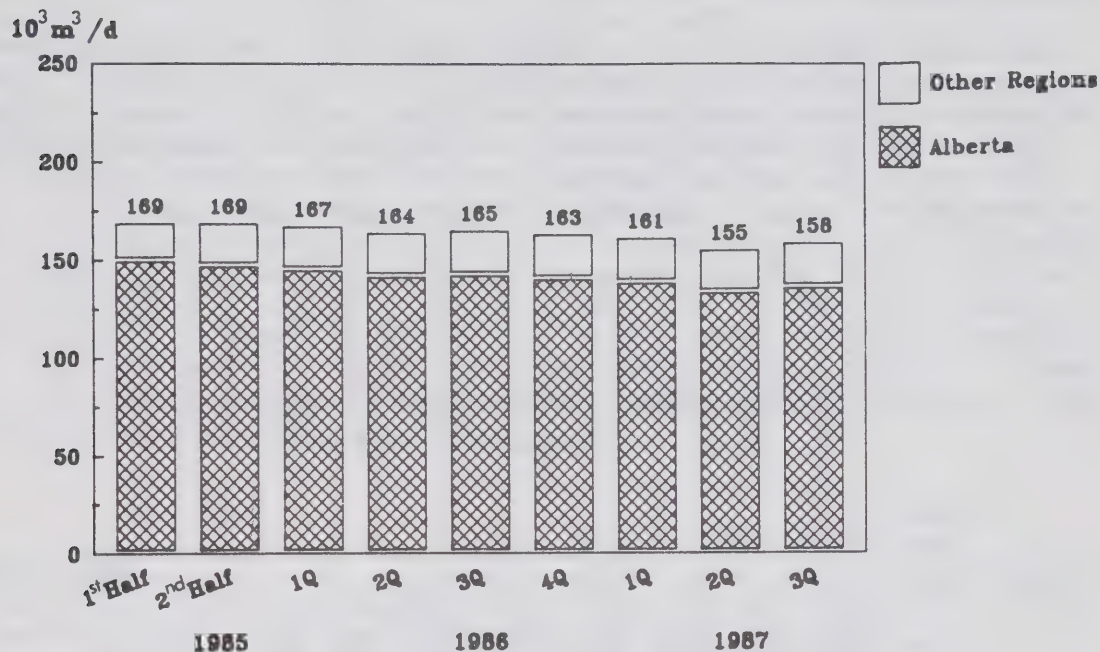
Source: Energy, Mines and Resources
and Interprovincial Pipe Line

5. AVAILABLE SUPPLY

Productive capacity of conventional light and medium crude oil in western Canada continued to decline in the third quarter of 1987, dropping close to $158 \times 10^3 \text{ m}^3/\text{d}$, (4% or $7 \times 10^3 \text{ m}^3/\text{d}$) from the third quarter of 1986. The decrease (all in Alberta) was less than previously forecast reflecting the fact that actual production of conventional light crude exceeded estimated productive capacity in the third quarter by some 2 to $3 \times 10^3 \text{ m}^3/\text{d}$. During this period, prorating constraints were virtually eliminated on a trial basis, permitting producers to produce at full capacity. Some of this "excess" production may simply have reflected a "flush" of excess inventories in gathering systems, but more likely reflected an underestimate of productive capacity, at least for the short term. The productive capacity outside of Alberta remained at about $23 \times 10^3 \text{ m}^3/\text{d}$, unchanged since early 1986.

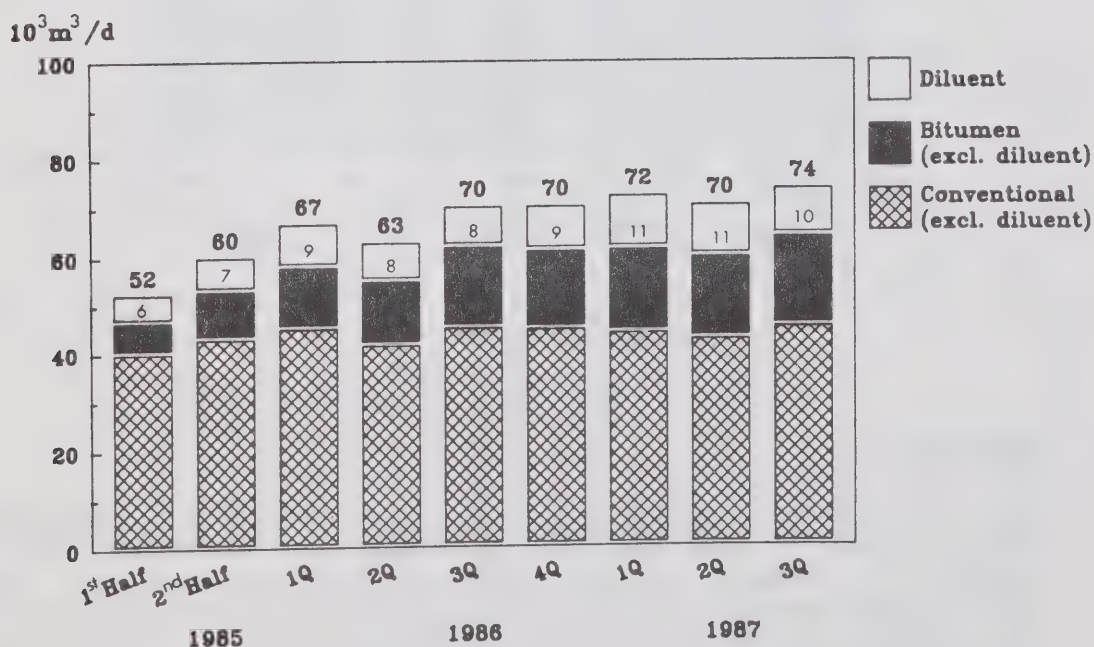
Total overall "neat" heavy crude productive capacity in the third quarter of 1987 rose to $63 \times 10^3 \text{ m}^3/\text{d}$ as a result of a $2 \times 10^3 \text{ m}^3/\text{d}$ (12%) increase in bitumen productive capacity. Blended heavy crude supply was estimated at $74 \times 10^3 \text{ m}^3/\text{d}$, an increase of $4 \times 10^3 \text{ m}^3/\text{d}$. Third quarter condensate supply (including diluent) increased slightly to $16 \times 10^3 \text{ m}^3/\text{d}$. The diluent requirements of $11 \times 10^3 \text{ m}^3/\text{d}$ were $2 \times 10^3 \text{ m}^3/\text{d}$ more than in the third quarter of 1986 and reflected the increased bitumen production. The recycled diluent portion remained constant at $1.4 \times 10^3 \text{ m}^3/\text{d}$.

CONVENTIONAL LIGHT AND MEDIUM CRUDE OIL PRODUCTIVE CAPACITY



Source: National Energy Board

HEAVY CRUDE PRODUCTIVE CAPACITY

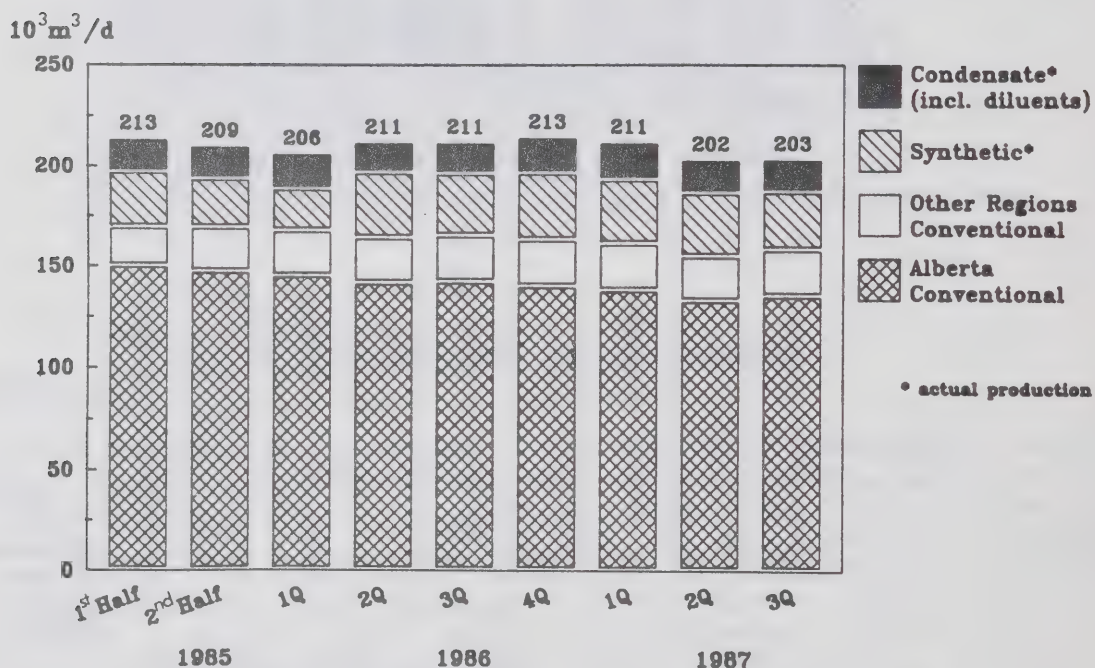


Source: National Energy Board

Production of synthetic crude at $28 \text{ } 10^3 \text{ m}^3/\text{d}$, was $2 \text{ } 10^3 \text{ m}^3/\text{d}$ lower than in the third quarter of 1986. This was the lowest production rate since the first quarter 1986 and reflected maintenance turnarounds at both Syncrude and Suncor.

Available supply of all domestic crude oil, including production of synthetic crude and condensate, declined $6 \text{ } 10^3 \text{ m}^3/\text{d}$, from $273 \text{ } 10^3 \text{ m}^3/\text{d}$ in the third quarter of 1986, to $267 \text{ } 10^3 \text{ m}^3/\text{d}$ in the third quarter of 1987. The trend of the last year and a half, where declines in light crude and equivalent capacity have exceeded net additions to heavy crude supply, continued in the third quarter.

TOTAL LIGHT CRUDE OIL AND EQUIVALENT AVAILABLE SUPPLY



Source: National Energy Board

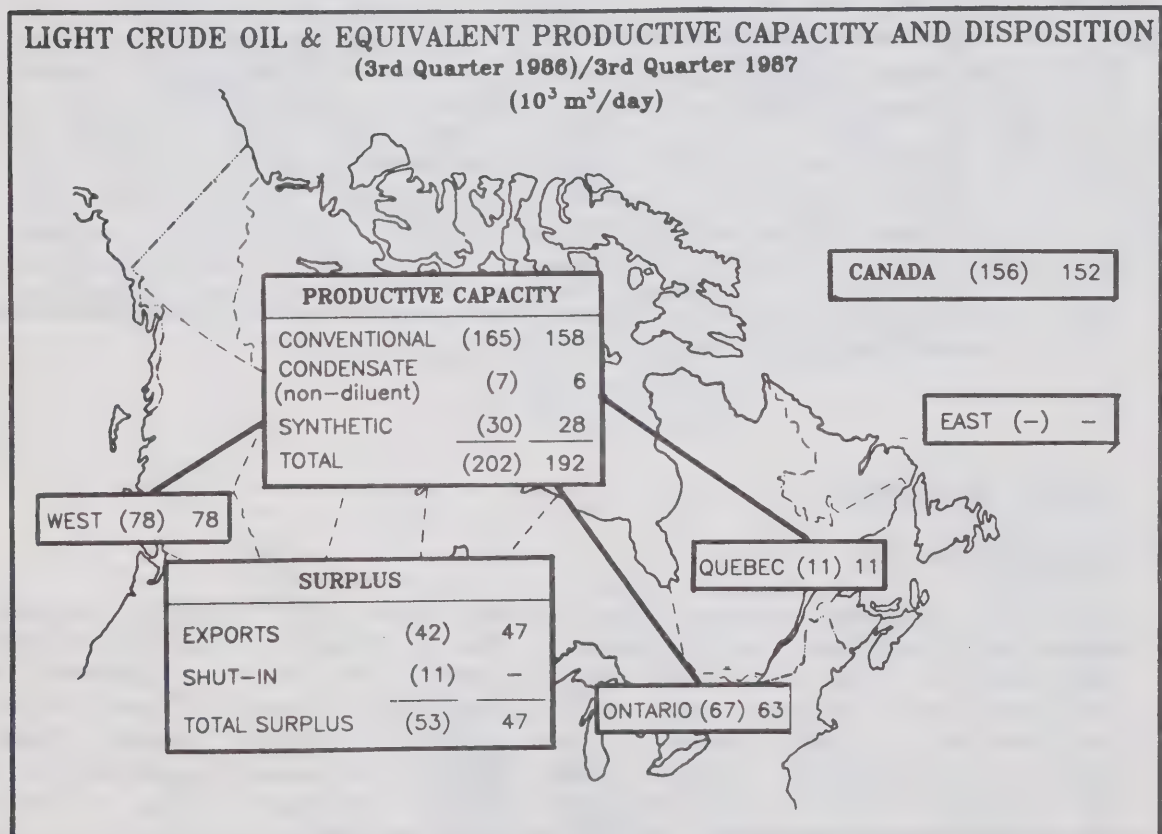
6. PRODUCTION

For the first time since early 1984, total crude oil production in the third quarter of 1987 was at full capacity. Production jumped to $267 \text{ } 10^3 \text{ m}^3/\text{d}$, $11 \text{ } 10^3 \text{ m}^3/\text{d}$ greater than the same quarter in 1986. Two of the main factors affecting the production were the implementation of the modified prorationing plan in Alberta, which allowed producers in Alberta to sell their crude without government constraints, and the completion of IPL's phase II pipeline expansion.

Despite the fact that productive capacity of light and equivalent was down from the third quarter of 1986 total production increased, reflecting the ability to deliver the crude to meet the increased demand. Production of Alberta light crude in August and September was slightly higher than the estimated productive capacity, leading to the possibility that the Alberta Energy Resources Conservation Board (ERCB) may revise its current short-term capacity estimate.

With the additional capacity on the IPL system, there was excess crude transport capacity on both the Trans Mountain (see Trans Mountain Pipe Line Deliveries) and on the Rangeland pipeline systems.

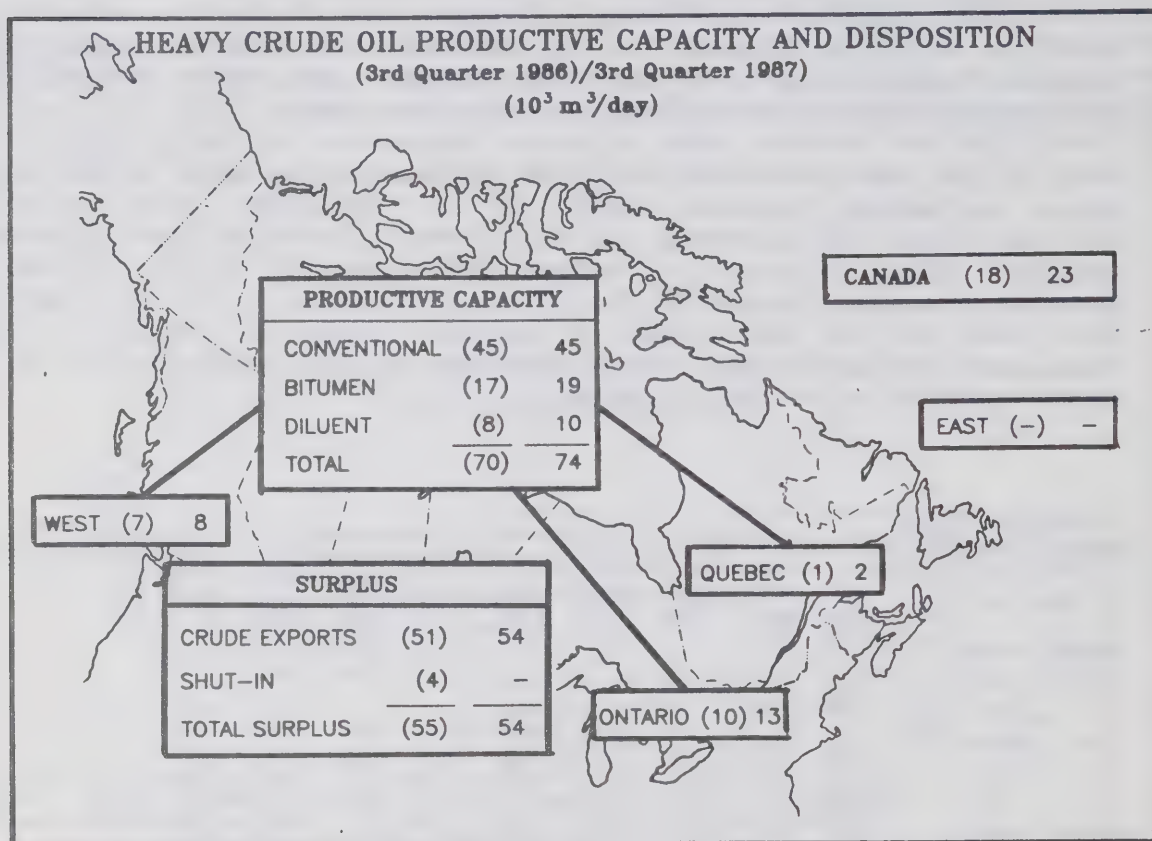
Much of the additional third quarter production was sold in the United States reflecting increased demand by U.S. refiners. Until recently, U.S. purchasers had generally tended to regard Canadian light crude as a marginal source of supply. However, this view is in the process of changing given the increasing deficit of light crude in the U.S. Northern Tier area and the improvement in Canadian producers' ability to meet contracted deliveries (IPL system expansion and the implementation of the ERCB's modified prorationing system).



SOURCE: National Energy Board

Note: The difference between productive capacity and disposition can be attributed to stock change.

Heavy crude production continued to grow, although at a rate slower than the rate of the decline in light crude. With no shut-in during the quarter compared with $4 \times 10^3 \text{ m}^3/\text{d}$ a year earlier, production increased to $74 \times 10^3 \text{ m}^3/\text{d}$, the highest level reported to date.



SOURCE: National Energy Board

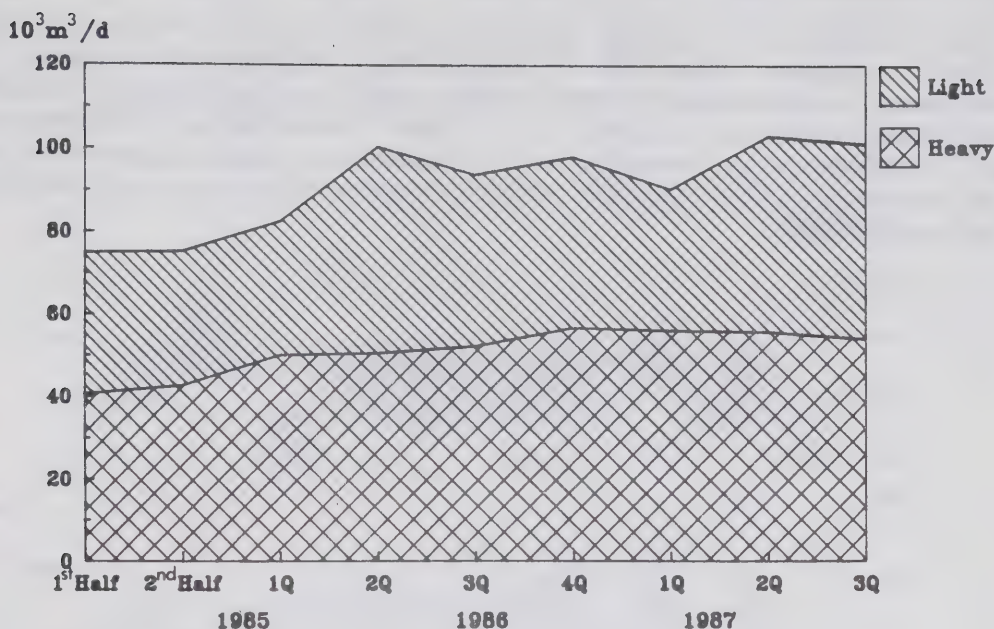
7. EXPORTS AND IMPORTS

7.1 Crude Oil Exports

Crude oil exports in the third quarter were $101 \times 10^3 \text{ m}^3/\text{d}$, or 40% of domestic production, an increase of 8% ($8 \times 10^3 \text{ m}^3/\text{d}$) from the period a year earlier. The additional exports, mainly to the U.S. mid-west, were primarily due to the addition of pipeline capacity (see Pipeline Utilization). Light crude exports were $6 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1986, at $47 \times 10^3 \text{ m}^3/\text{d}$. Heavy crude exports increased marginally, from $52 \times 10^3 \text{ m}^3/\text{d}$ to $54 \times 10^3 \text{ m}^3/\text{d}$, but fell by more than $3 \times 10^3 \text{ m}^3/\text{d}$ from the second quarter. The quarter-over-quarter decrease in heavy crude exports was offset by the increase in take by Canadian refiners.

Canadian crude continued to be exported through Montreal and Vancouver in the third quarter albeit at reduced levels. These exports, largely of heavy crude, were shipped, for the most part, to the U.S. Gulf and East Coasts.

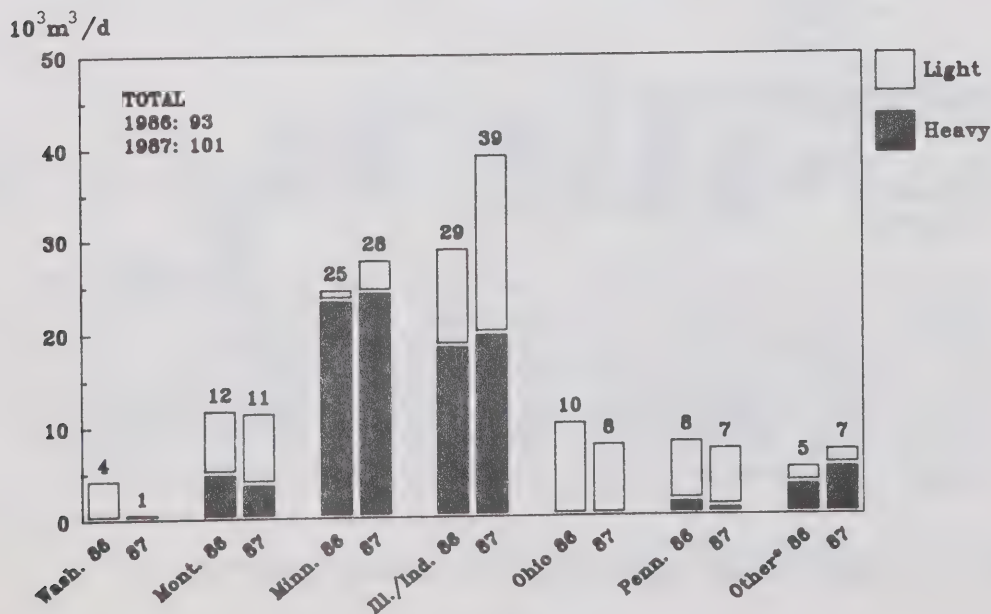
CRUDE OIL EXPORTS



Source: National Energy Board

Within the United States, pipeline-connected exports were 6 $10^3\text{m}^3/\text{d}$ higher than for the same period of 1986, (all light crudes). The largest market continued to be in the Illinois and Minnesota areas where over 71% of exported crude was shipped. Total shipments to Minnesota, of 28 $10^3\text{m}^3/\text{d}$, included over 3 $10^3\text{m}^3/\text{d}$ of light, 2 $10^3\text{m}^3/\text{d}$ more than in 1986. Heavy crude deliveries remained unchanged. Similarly, in the Chicago area deliveries of heavy crude were virtually the same whereas light crude exports more than doubled to 20 $10^3\text{m}^3/\text{d}$. Light crude exports to other U.S. destinations declined, as the export market shifted to the mid-west with the IPL expansion.

LIGHT AND HEAVY CRUDE OIL EXPORTS BY DESTINATIONS (Third Quarter)



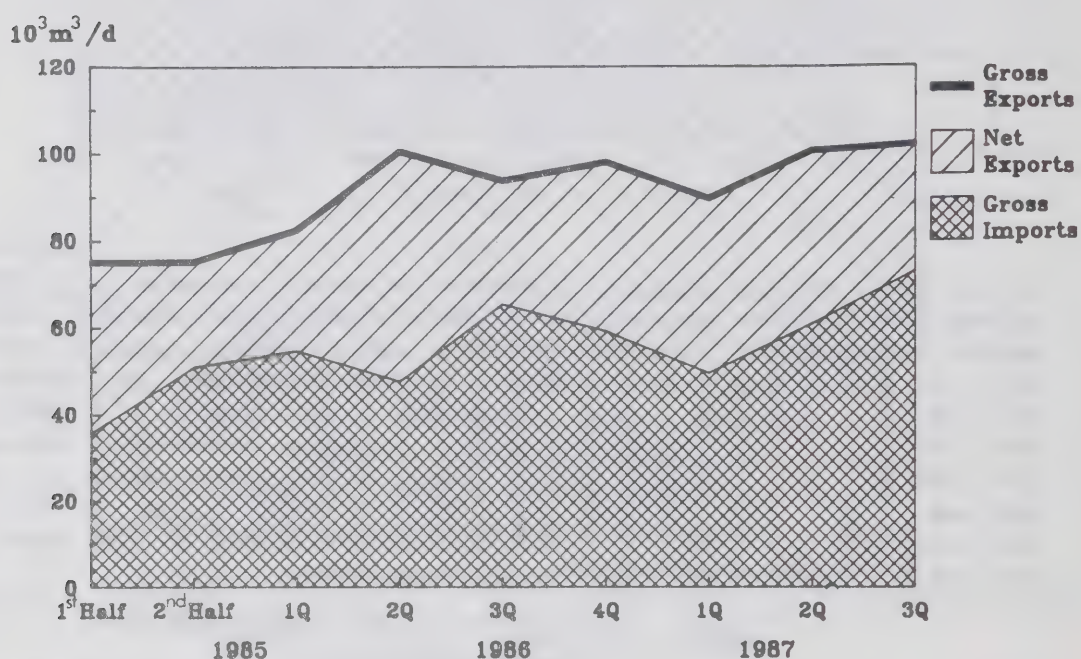
Source: National Energy Board

* Includes Offshore

7.2 Crude Oil Imports

Gross crude oil imports for the third quarter were $72 \times 10^3 \text{ m}^3/\text{d}$, $7 \times 10^3 \text{ m}^3/\text{d}$ higher than for the same quarter in 1986, reflecting increased demand in eastern Canada, and the additional requirements of the Come-by-Chance refinery. Oil import dependence* in Canada, expressed as a percentage of domestic oil consumption, spiked upward to 33%, during the third quarter, compared with an import dependence of 27% in the third quarter of 1986.

CRUDE OIL EXPORTS AND IMPORTS



Source: National Energy Board

7.3 Petroleum Product Trade

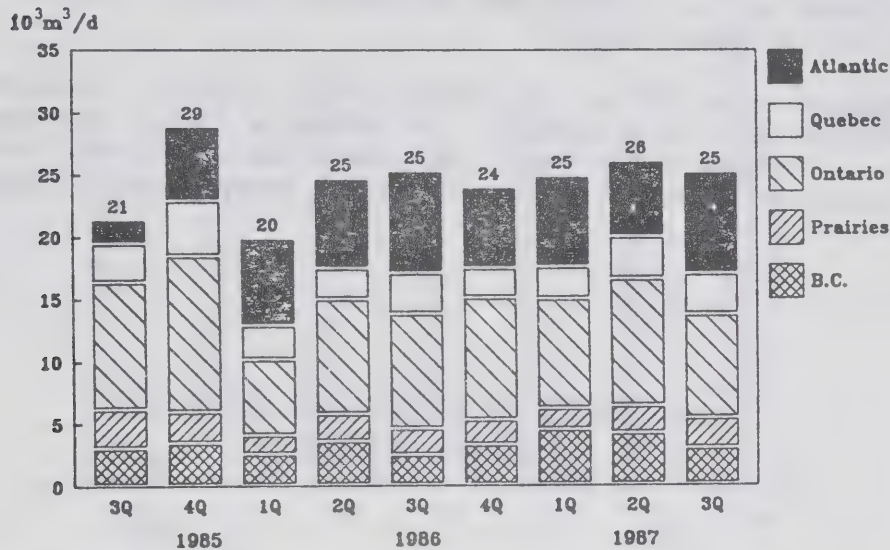
As a result of a slight decline in imports, the net product surplus increased to about $8 \times 10^3 \text{ m}^3/\text{d}$, from $6 \times 10^3 \text{ m}^3/\text{d}$ in the third quarter of 1986.

Exports, at $25 \times 10^3 \text{ m}^3/\text{d}$, continue to play an important role with respect to refinery utilization, particularly in the Atlantic and Ontario, which account for two-thirds of Canadian product exports. In the Atlantic, as much as 30% of refinery crude run to stills is for the export market (This share will increase as the Come-by-Chance refinery in Newfoundland becomes fully operational in the fourth quarter) - while in Ontario over 10% of refined product production is exported.

*Crude oil imports less net refined oil product exports.

Except for Quebec, all regions continued to be net exporters of refined products, with most exports destined for the United States. Historically, almost all Canadian exports (90 to 95%) have been to the United States. This trend has continued in 1987.

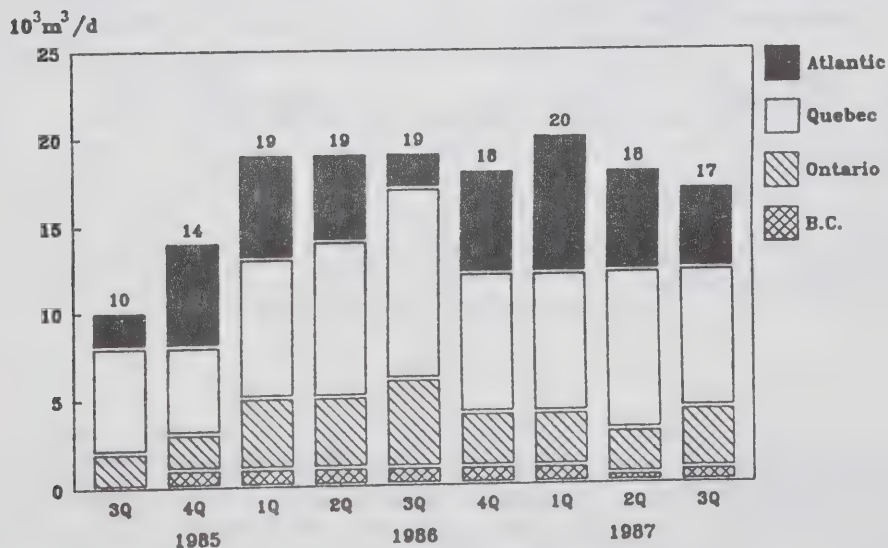
GROSS REGIONAL PETROLEUM PRODUCT EXPORTS



Source: Statistics Canada

On the import side, Quebec maintained its position as the largest importing region, accounting for about 50% of total imports. Ontario and the Atlantic made up most of the balance. Contrary to the situation in the export market, imports from the United States only averaged about 50% of total imports. Venezuela, and to a lesser extent, European countries, are also source countries for Canadian imports.

GROSS REGIONAL PETROLEUM PRODUCT IMPORTS



Source: Statistics Canada

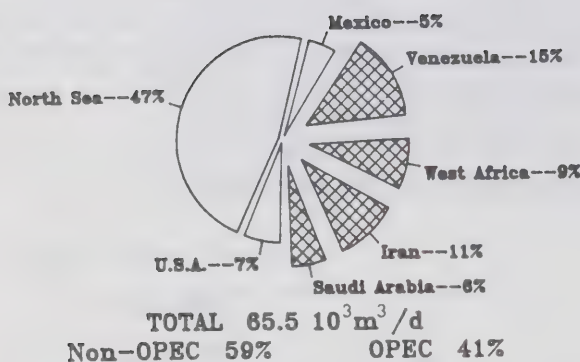
8. COMPOSITION OF CRUDE OIL IMPORTS

As was the case in the first half of 1987, North Sea crude continued to account for more than half of the total imports (52%). Mexico and the United States supplied 5% and 4%, respectively of Canadian import needs, for a total of $8 \times 10^3 \text{ m}^3/\text{d}$, $2 \times 10^3 \text{ m}^3/\text{d}$ less than a year earlier. Almost 90% of the U.S. crude was delivered to Ontario refineries with the balance to the Quebec region.

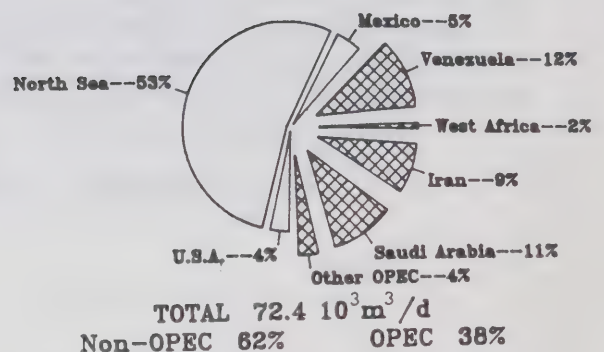
OPEC imports were 38% of the total, or $27 \times 10^3 \text{ m}^3/\text{d}$, down 2% from its market share of a year earlier, but slightly higher in terms of total imports. The bulk of the OPEC - sourced crude originated from Venezuela, Saudi Arabia and Iran. Imports from Africa dropped significantly.

SOURCES OF CRUDE OIL IMPORTS (Third Quarter)

1986



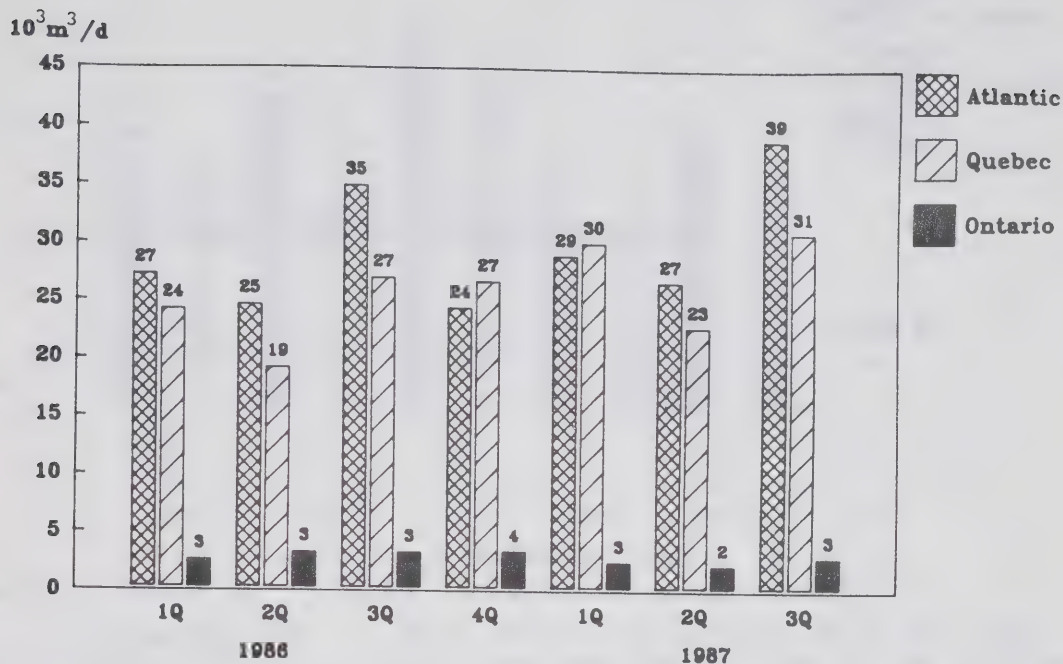
1987



Source: National Energy Board

On a regional basis, the Atlantic region imports rose $4 \times 10^3 \text{ m}^3/\text{d}$, to $39 \times 10^3 \text{ m}^3/\text{d}$ from the third quarter 1986, reflecting the start up of the Come-by-Chance refinery, additional product demand and a crude inventory build. In Quebec, imports accounted for over 70% of total receipts, roughly the same as in 1986, although total imports rose $4 \times 10^3 \text{ m}^3/\text{d}$ to $29 \times 10^3 \text{ m}^3/\text{d}$. Imports by Ontario refiners remained at about $3 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL IMPORTS BY REGION



Source: Refiners' Submissions
to the National Energy Board

9. ENERGY TRADE BALANCE*

9.1 International

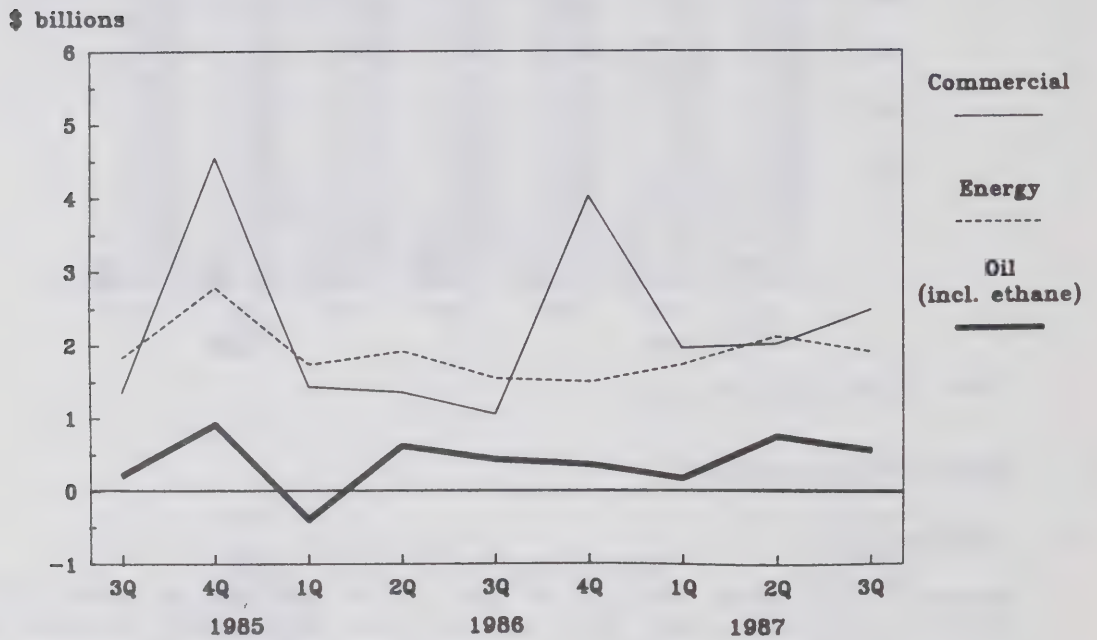
Canada's oil trade surplus in the third quarter declined by over \$100 million from the second quarter, to a net balance of \$550 million. This outcome reflects a decrease in net crude exports (increase in imports greater than in exports). On a year-over-year basis, the current surplus is almost \$140 million higher, largely as a result of an increase in net product exports which swung from a \$20 million deficit in 1986, to a \$80 million surplus in the third quarter of 1987.

The overall energy trade balance increased marginally, to \$1911 million, from \$1883 million in the second quarter, but it was almost \$400 million higher than a year earlier. The drop in the crude oil balance from the second quarter was offset by increases in most of the other energy commodities, especially in coal, which increased 46% to a third quarter surplus of \$225 million. On a year-over-year basis, natural gas and electricity both contributed to the higher surplus.

* The trade figures referred to in this section are derived from customs documents by Statistics Canada and tend to differ from other sources used for volumetric flows because of timing and valuation differences.

Canada's overall merchandise trade balance increased 38% in the third quarter to \$2488 million. Energy accounted for roughly three quarters of the total surplus.

OIL AND ENERGY TRADE BALANCE



Source: Statistics Canada

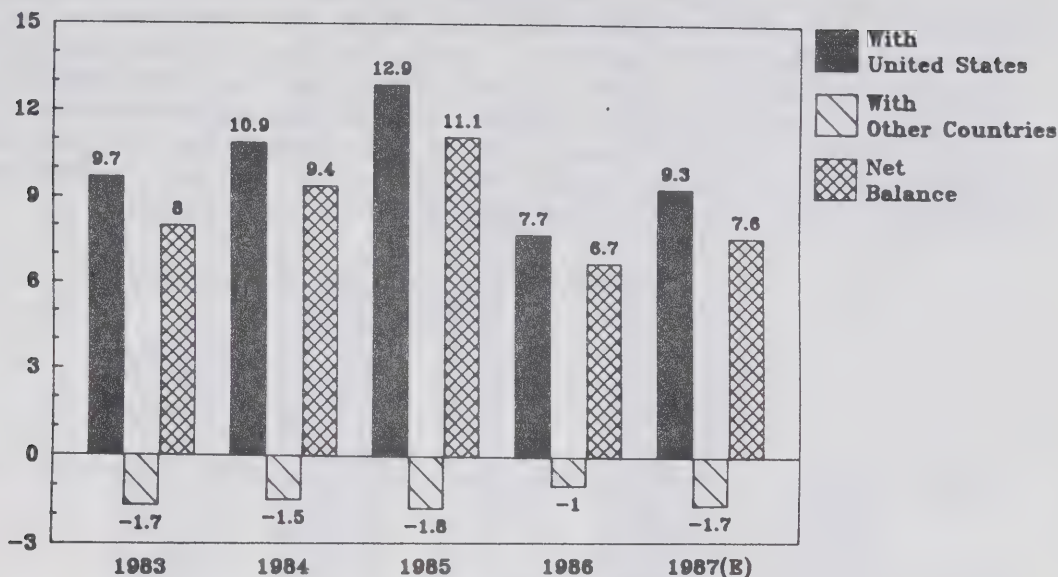
9.2 United States

Since the beginning of this decade, as a percentage of total commercial trade, Canada's energy trade surplus has accounted from 50 to over 100% of the overall Canadian trade surpluses. Most of these surpluses have been with Canada's largest trading partner, the United States. In fact, although energy accounts for about 15% of the value of exports and less than 5% of the value of imports with the United States, it represents over 50% of our surplus in commercial trade with that country.

Prior to 1986 our energy surplus with the United States grew steadily and approached \$13 billion in 1985. Despite total energy deficits of between \$1 and 2 billion a year with all our other trading partners, the large surplus with the United States accounted for the strong energy position.

ENERGY TRADE BALANCE

\$ billions



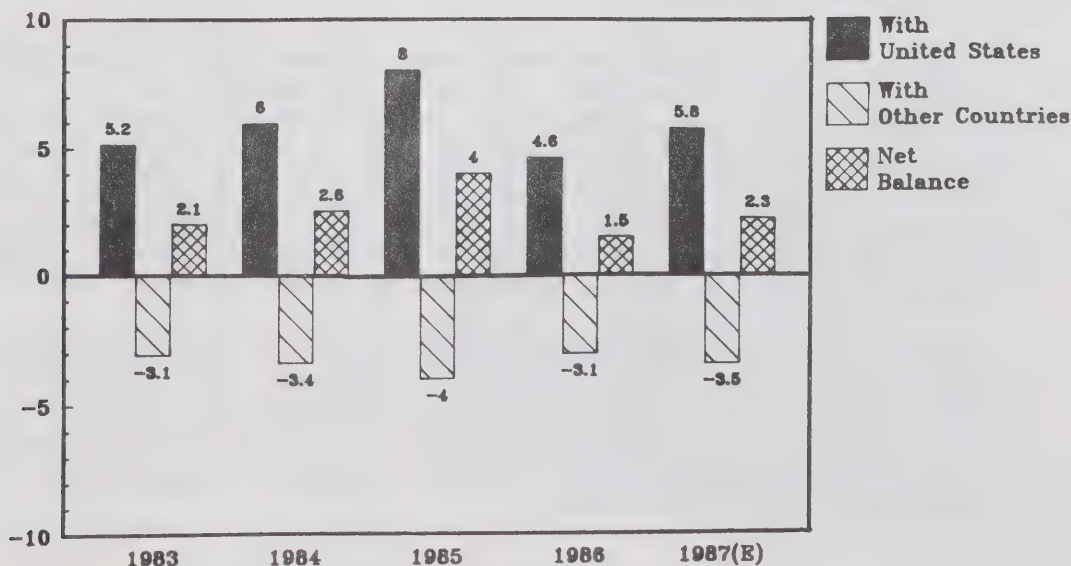
(E): Estimate based on January-September actuals

Source: Statistics Canada

The largest contribution to total Canada/U.S. energy trade has been in the oil category (crude oil, petroleum products and natural gas liquids), which have contributed to roughly 55 to 60% of the net energy trade balance with the United States. This proportion has remained fairly constant since the early 1980s. Since 1983, crude oil exports have more than doubled: from $15 \times 10^6 \text{m}^3$ to an estimated $35 \times 10^6 \text{m}^3$ in 1987. Petroleum product trade has also been important with net exports of $7 \times 10^6 \text{m}^3$ during the years 1983-1985 and over $4 \times 10^6 \text{m}^3$ for 1986 and 1987.

OIL TRADE BALANCE

\$ billions



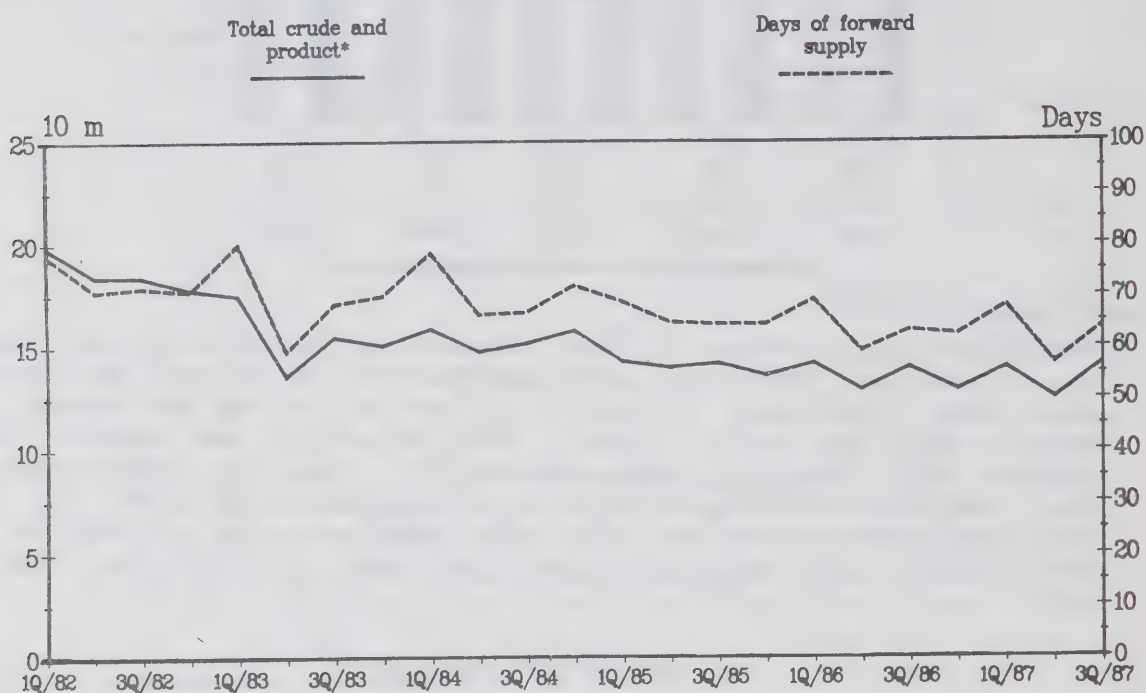
(E): Estimate based on January-September actuals

Source: Statistics Canada

10. STOCKS

Over the course of the third quarter, product inventories were built to a level of 11.4 million cubic metres, which was the same as last year at the end of the third quarter. Crude stocks, on the other hand, rose somewhat faster during the quarter, than over the same period last year, to reach 2.8 million cubic metres, almost 11% higher than in 1986. Part of the crude stock increase can be attributed to the start-up of the Come-by-Chance refinery, which took place at the end of the period under review. Crude oil stocks also rose slightly in Ontario.

CLOSING CRUDE AND PRODUCT INVENTORIES IN CANADA



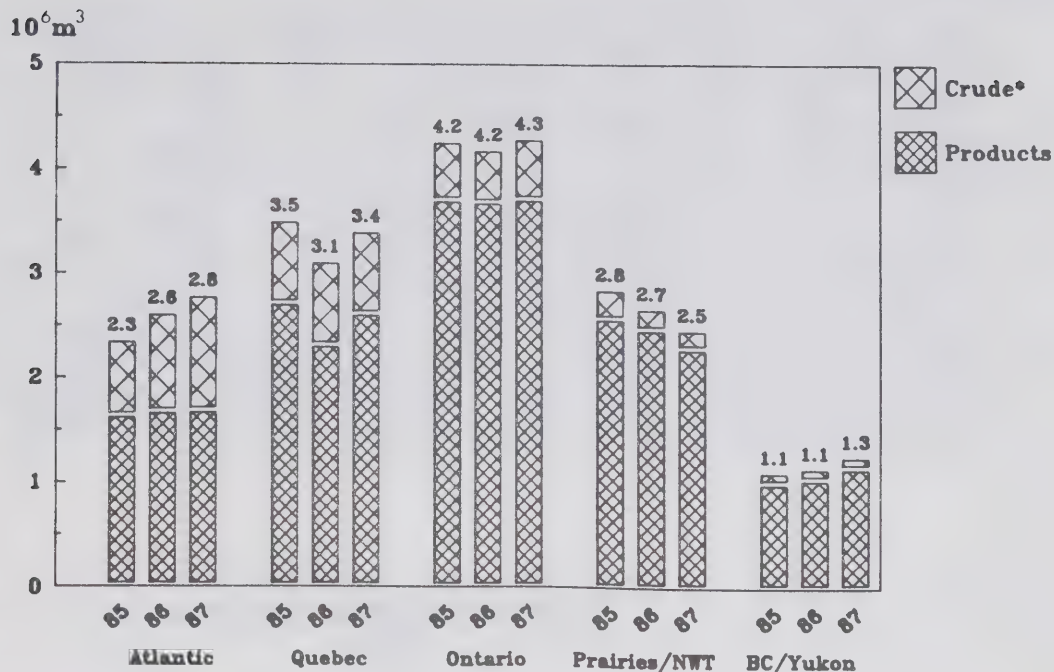
* Excludes crude in pipeline tanks

Source: Energy, Mines and Resources

The 2% increase in combined crude and refined product inventories roughly matched the year-over-year increase in sales, so that the stocks available at the end of the third quarter represented 64 days of forward consumption, the same level as one year earlier. It is interesting to note that the Atlantic region, which has the longest supply lines, continued to hold the largest supply relative to sales, or about 100 days. It was also the only region (other than British Columbia) where any appreciable increase in the ratio of stocks to sales occurred.

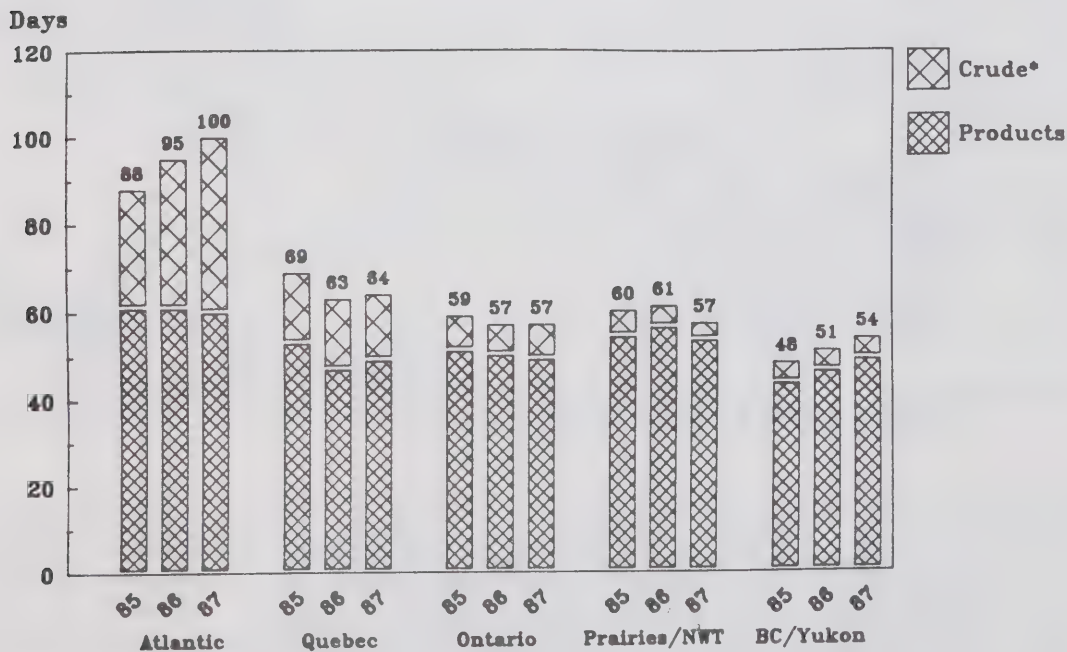
It should be noted that these stocks do not include crude oil in pipeline tankage. If that oil were to be included in stocks (as is done by the International Energy Agency (IEA)), the ratio of stocks to consumption would rise by roughly 8 days, to 72. This compares with the IEA average for the end of September of 99 days. (Excluding government stocks, the IEA average drops to 76 days.)

CLOSING INVENTORIES - BY REGION SEPTEMBER



Source: Statistics Canada

DAYS OF FORWARD SUPPLY

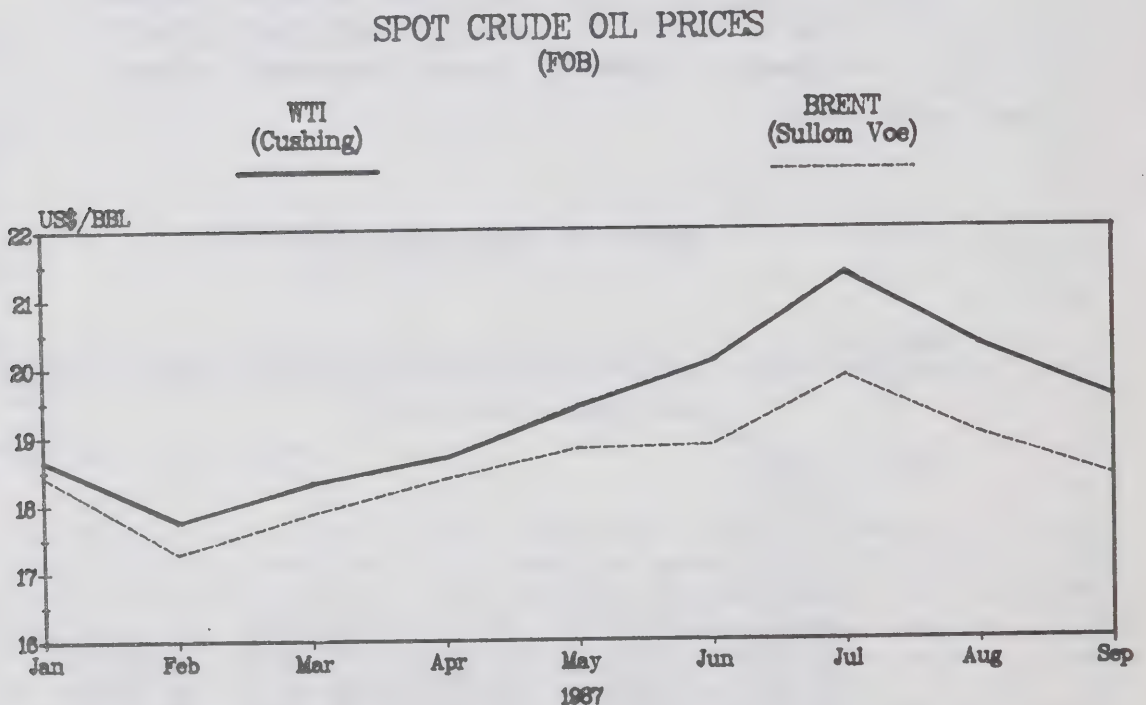


Source: Statistics Canada

11. PRICES

11.1 Light and Heavy Crude Oil

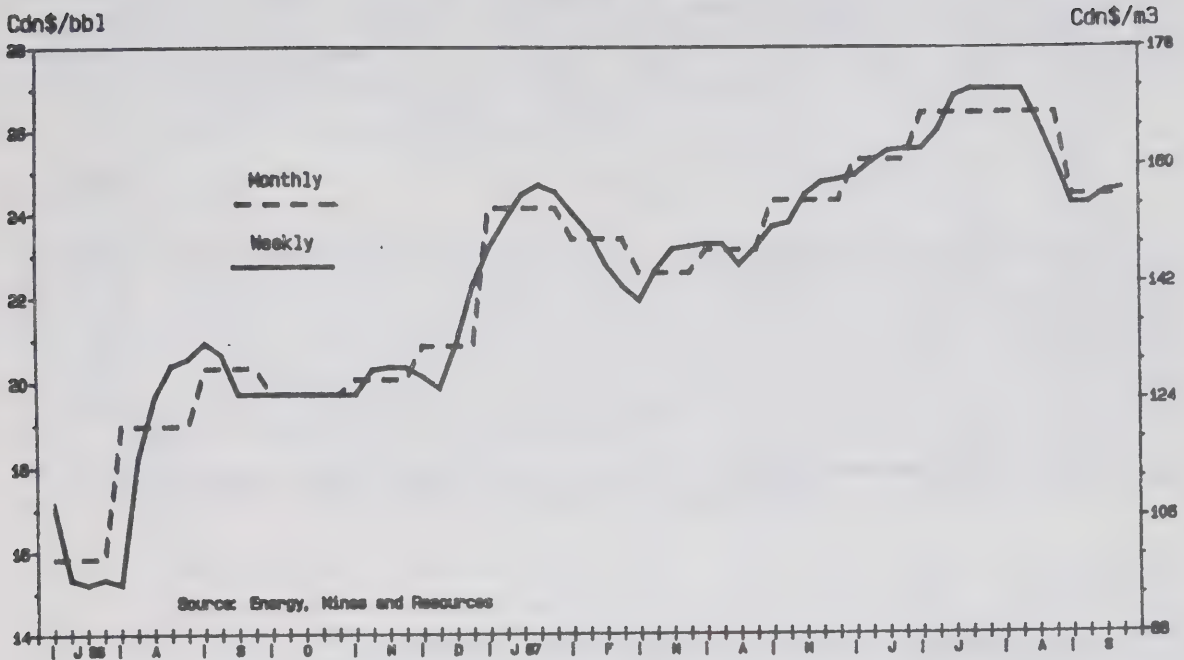
Spot market crude oil prices were particularly volatile over the third quarter of 1987. After steadily climbing to the US\$18 to US\$20 per barrel range over the second quarter, the spot price of West Texas Intermediate (WTI) surged beyond US\$22 per barrel in late July. This sharp upswing in prices was primarily attributed to the heightened military tension in the Persian Gulf resulting from the U.S. decision to escort reflagged Kuwaiti tankers through the Gulf, and OPEC's decision to maintain its self-imposed production quota of 16.6 MMB/D. Spot crude prices did, however, move gradually downward, after the mid-summer rise, as spot WTI averaged \$19.50 per barrel over September. This downturn was basically in response to excess production by some OPEC members. Over the months of July and August, OPEC exceeded its production ceiling by some 2.9 MMB/D. The graph below tracks the movement of spot prices of WTI and Brent over the period January to September, 1987.



SOURCE LONDON OIL REPORT

Canadian light crude oil prices continue to follow the trend set by international crudes, primarily the U.S. benchmark crude, WTI. The following two graphs illustrate Canadian posted prices and the relationship between prices for WTI and Canadian crude after adjustments for delivery times to Chicago.

Edmonton Light Crude Postings 40°API, <0.5% Sulphur

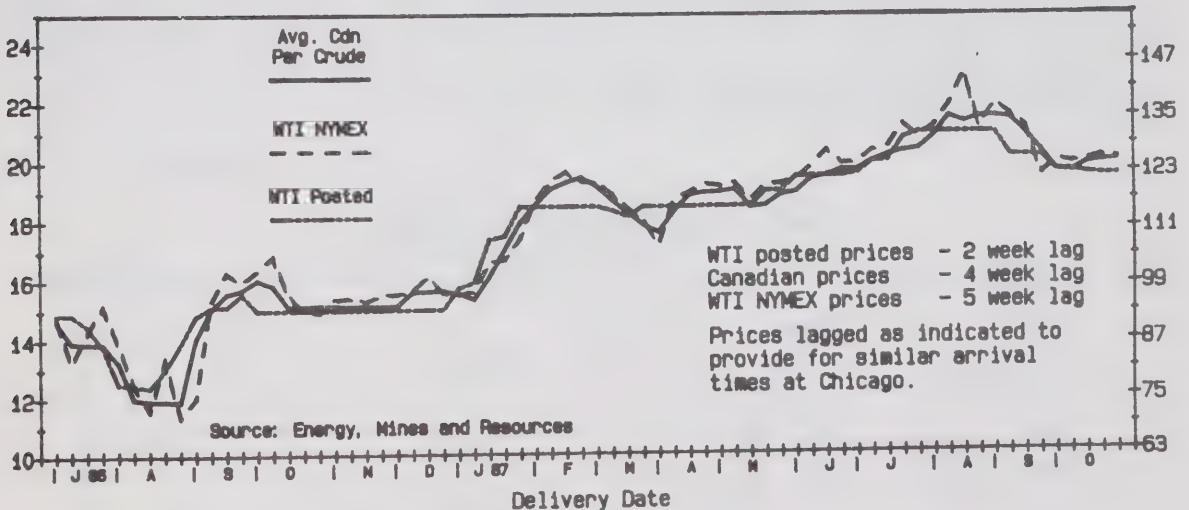


F1

Light Crude Oil Delivered To Chicago

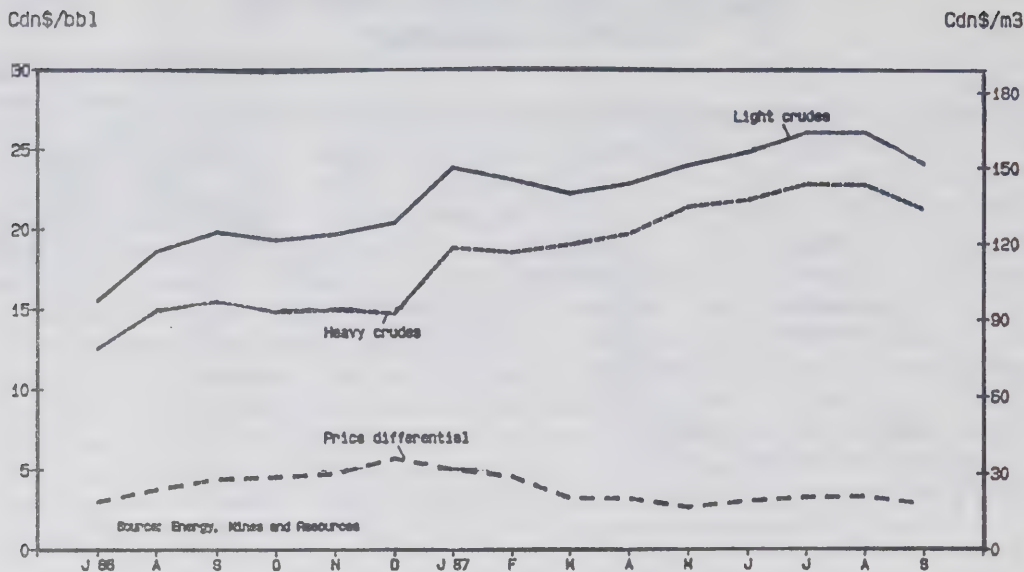
US\$/bbl

US\$/m3



The graph below compares actual prices for Alberta light and heavy crude oil, purchased for use in Canada at main trunk line injection stations. On average, light crude oil quality during the third quarter 1987 was 37.9° API, 0.38% sulphur, while heavy crude was 23.8° API, 2.76% sulphur. As expected, the differential between Canadian light and heavy crude prices during the third quarter was about \$3.00 per barrel, similar to the level in the second quarter. This low differential, relative to light crude, is attributed to the asphalt season and the commensurate increase in domestic heavy crude demand by Canadian refiners.

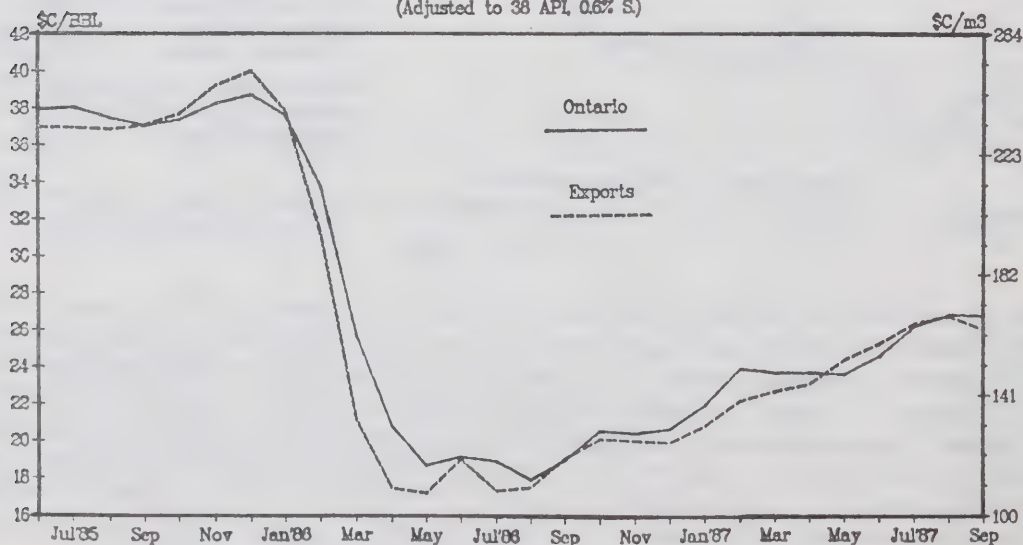
Comparison of Domestic Light and Heavy Crudes Actual Purchase Prices



11.2 Light Crude Oil Values: Export Versus Domestic

Throughout most of the third quarter, aggregate export values and the value of domestic light crude delivered to Ontario refiners (using Ontario as a proxy for average Canadian refiner acquisition costs of indigenous light crude and equivalent) were virtually identical in the \$26 to \$27 per barrel range. The increasing deficit of light crude in the U.S. Northern Tier area and the improvement in Canadian producers' ability to meet contracted deliveries (IPL system expansion and the implementation of the ERCB's modified prorationing system), contributed to the elimination of the export price discount some U.S. refiners had enjoyed in 1986 and early 1987.

Canadian Light Crude Export & Ontario Domestic Acquisition Values * (Adjusted to 38 API, 0.6% S)



* Both values adjusted for transportation cost to a common point (Ontario)

However as crude oil prices began to decline in late summer, the gap in the Ontario/export value reappeared in favour of exports (by about \$0.75 per barrel.) Most of this "discount" in September was probably as a result of the fact the U.S. export markets (primarily Chicago area) are nearer to the source of production than Ontario markets and therefore are affected sooner when international crude prices change.

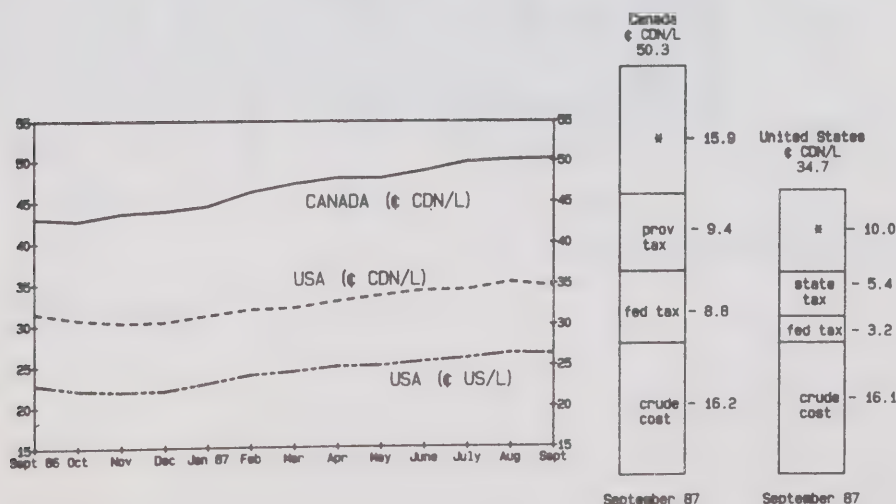
11.3 Product Prices

Retail prices for automotive gasolines and diesel fuel increased during the third quarter of 1987, continuing a trend which started in November of 1986. While average retail gasoline prices increased about 1.3 cents per litre over the quarter (see Appendix I), September 1987 prices remained 4.7 cents per litre below the January 1986 level. The retail price increase was primarily market driven, although tax increases had a minor impact. The reinstatement of the provincial road tax on gasoline (7 cents/litre), which had been removed in May of 1982, was the main reason for the retail price increase in Saskatchewan.

Retail diesel prices increased about 0.6 cents per litre in the third quarter, bringing total increases since the beginning of 1987 to 3.2 cents per litre. These increases were considerably less than gasoline price increases for the corresponding periods. However, the retail diesel market represents only about 15% of total diesel sales, while more than 85% of gasoline sales are at the retail level.

The following line graph and bar charts compare the average gasoline price in Canada and the United States. The bar charts illustrate the components of the average pump price in each country using September 1987 data. Crude costs are the average refinery acquisition costs (cost of crude received at the refinery gate) lagged by 60 days in Canada and 45 days in the United States. The refining and marketing costs and profits component is the residual revenue available to cover refining, marketing and distribution costs and to provide a return to the industry on its investment.

Canada vs U.S. - Motor Gasoline
Average Retail Price - All Grades
Average Full-Serve & Self-Serve



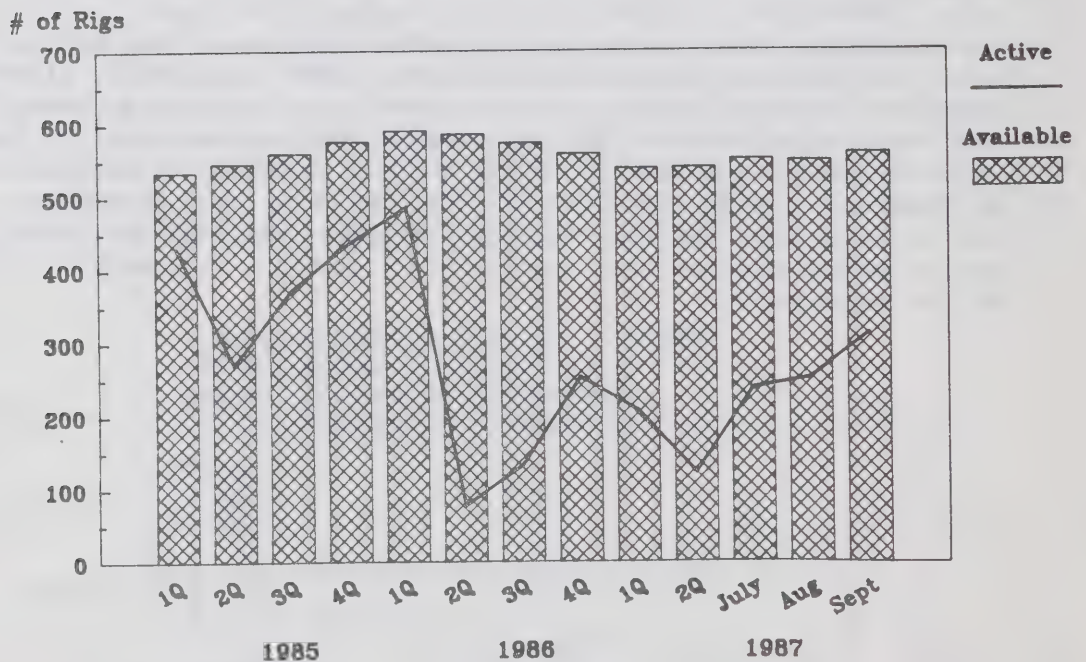
* Refining and Marketing Costs and Profits

Gasoline prices in Canada are higher than in the United States. In September the differential between the average Canadian and U.S. prices was 15.6 cents per litre, of which almost two-thirds was accounted for by higher taxes in Canada (9.6 cents per litre). The larger refining and marketing costs and profit component in Canada reflects from structural differences between the two markets e.g. economies of scale in refining, distribution and retailing facilities favour U.S. refiners and marketers.

12. DRILLING RIG ACTIVITY

Industry confidence in future crude oil prices and the investment climate continued in the third quarter as indicated by the level of activity in exploration. Drilling rig utilization reached 56% in September, from a low of 12% in April 1987. Third quarter activity was almost 20 percentage points higher than the rate of a year ago, and reflects improved prices and government drilling incentives.

CANADIAN DRILLING RIG ACTIVITY



Source: Energy, Mines and Resources

Appendix I
AVERAGE REGULAR LEADED GASOLINE PRICES
FULL-SERVE AND SELF-SERVE
1986-1987

	1986 Sept.	1986 Dec.	1987 March	1987 June	Change 1987 Sept.	Last 12 Months
	(cents per litre)				(%)	
St. John's (Nfld).	49.9	50.6	53.1	52.9	52.6	5.4
Charlottetown	47.3	49.2	51.3	51.8	51.8	9.5
Halifax	46.7	48.7	50.9	47.7	47.4	1.5
Saint John (N.B.)	43.9	44.4	44.8	45.9	45.8	4.3
Montreal	47.2	48.9	52.6	53.5	54.1	14.6
Ottawa	41.6	43.2	47.1	47.7	48.8	17.3
Toronto	38.7	40.4	42.8	44.6	47.5	22.7
Winnipeg	45.6	45.4	47.1	47.0	47.1	3.3
Regina	34.9	29.0	40.7	40.1	44.5	27.5
Calgary	36.5	36.3	39.0	43.9	41.7	14.2
Vancouver	40.0	41.0	46.1	50.3	52.7	31.8
Canadian average	40.6	41.2	44.6	46.7	48.0	18.2
Consumption taxes included:						
- Federal	7.5	7.3	9.0	9.1	8.8	17.3
- Provincial	7.3	7.2	6.8	8.4	9.1	24.7

Source: Statistics Canada

Appendix II
CONSUMPTION TAXES ON PETROLEUM PRODUCTS
September 1, 1987

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL	Diesel
	(%)		(cents per litre)			
<u>Federal Taxes</u>						
Sales			3.29*	3.29*	3.37*	2.69*
Excise			5.5	5.5	5.5	4.0
<u>Provincial Taxes</u>						
Newfoundland	22	26	9.8	9.8	9.8	12.1
Prince Edward Island	20	23	8.9	8.9	8.9	10.5*
Nova Scotia*	20	21	8.3	8.3	8.3	8.6*
New Brunswick	20	23	7.8*	8.3*	8.6*	8.2*
Quebec (a)	-	-	14.4	14.4	14.4	12.45
Ontario	-	-	8.3	8.3	8.3	9.9
Manitoba	-	-	8.9	8.0	8.0	9.9
Saskatchewan	-	-	7.0*	7.0*	7.0*	7.0*
Alberta	-	-	5.0	5.0	5.0	5.0
British Columbia	20(b)	20(b)	9.49*	7.49*	7.49*	7.93*
Yukon	-	-	4.2	4.2	4.2	5.2
Northwest Territories	17	(c)	8.7	8.7	8.7	7.4

(a) Reduced by varying amounts in certain remote areas and within 20 kilometres of the provincial and U.S. borders.

(b) Additional transit tax of 2.5¢ per litre in Vancouver.

(c) 85% of gasoline tax.

* Changed from last quarter

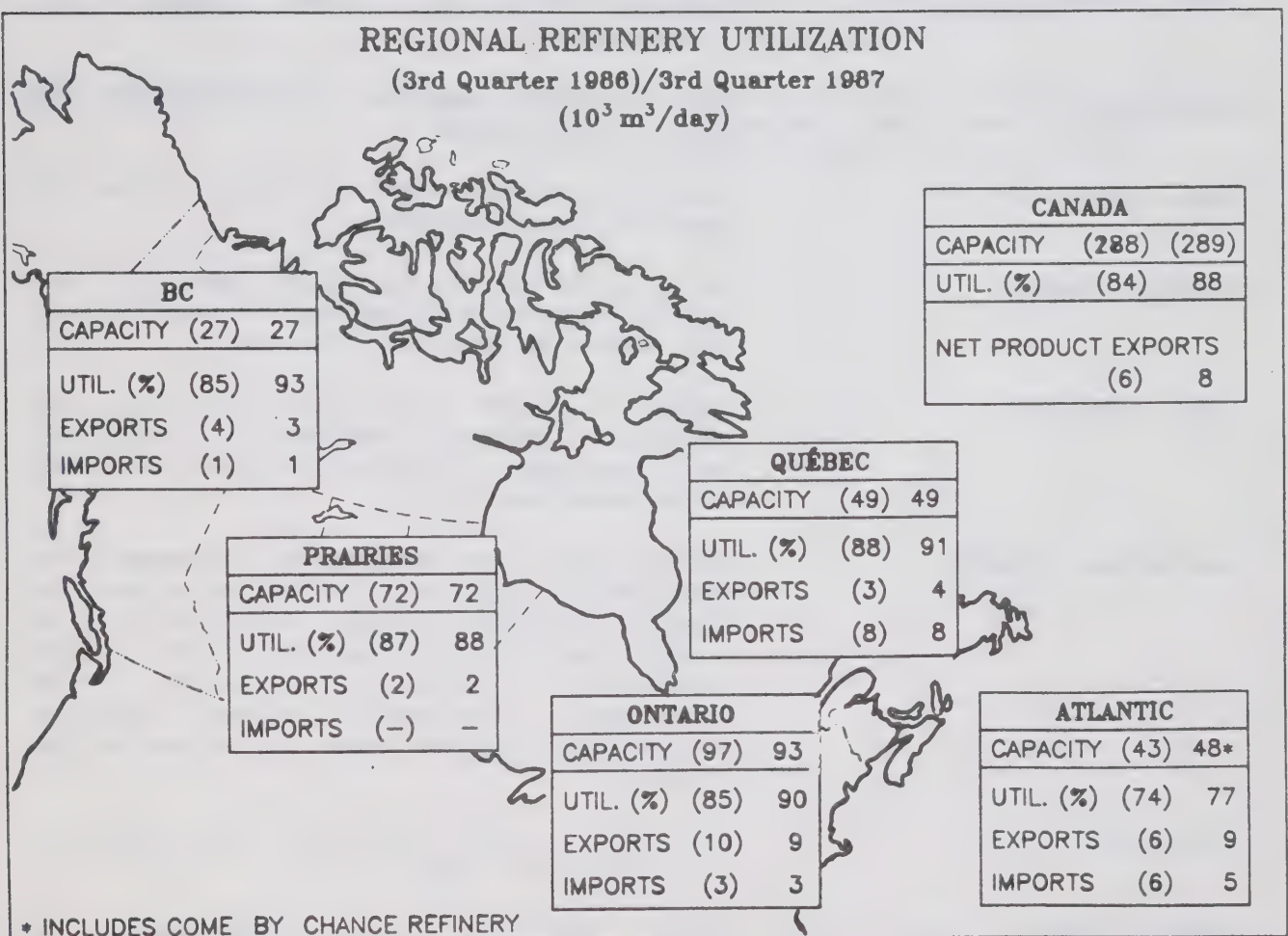
Source: Statistics Canada

Appendix III

REGIONAL REFINERY UTILIZATION

(3rd Quarter 1986)/3rd Quarter 1987

(10³ m³/day)



Source: Statistics Canada

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as condensate. A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity

Also referred to as producibility. The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.

Shut-in capacity

The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.

Synthetic crude oil

Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

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The Canadian Oil Market

Vol. III, No. 4 Fourth Quarter 1987

Annual Review



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THE CANADIAN OIL MARKET

1. OVERVIEW

This issue of The Canadian Oil Market is the eleventh in a series reporting quarterly on Canadian oil supply and demand developments. This issue covers the fourth quarter of 1987 and reviews the year as a whole.

As a result of continued growth in the Canadian economy, the demand for oil products remained fairly strong in 1987. Led by rising consumption of petroleum products, and by higher levels of product imports/exports and inventories, refinery capacity utilization increased. After a series of refinery closures across the country over the past decade, one installation reopened in 1987.

On the upstream side, changes in prorating systems and pipeline expansion resulted in increased production of crude oil, permitting additional deliveries to both export and Canadian markets. Production of synthetic oil was held back by a major fire that halted the operations of the Suncor plant in October.

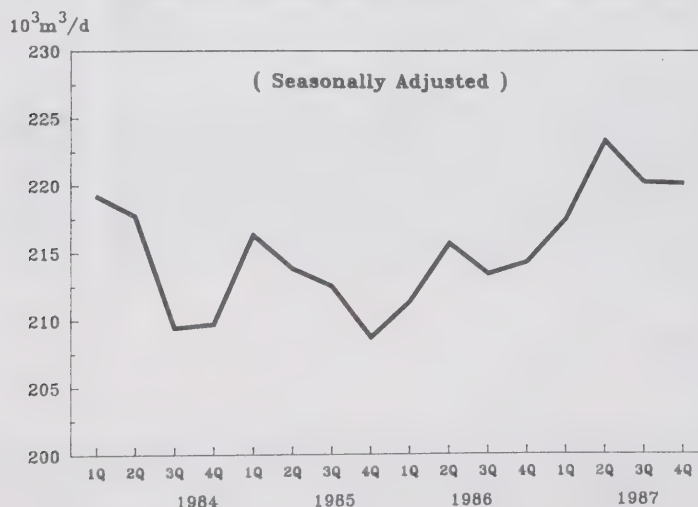
Higher upstream activity levels are anticipated in 1988, with crude oil production expected to remain strong, supplying both domestic consumption, and an increasing export market. Later in the year, Canada's first heavy crude oil upgrader is scheduled to begin production, with a potential capacity of about $8 \times 10^3 \text{ m}^3/\text{d}$.

The above highlights, and other regular features, are reviewed in the following pages with supporting graphs and annexes for reference.

2. DOMESTIC DEMAND

In the fourth quarter of 1987, seasonally adjusted petroleum product consumption in Canada levelled off at $220 \times 10^3 \text{ m}^3/\text{d}$, which was also the average level for the entire year, or roughly 3% above 1986 demand.

TOTAL PETROLEUM PRODUCT CONSUMPTION

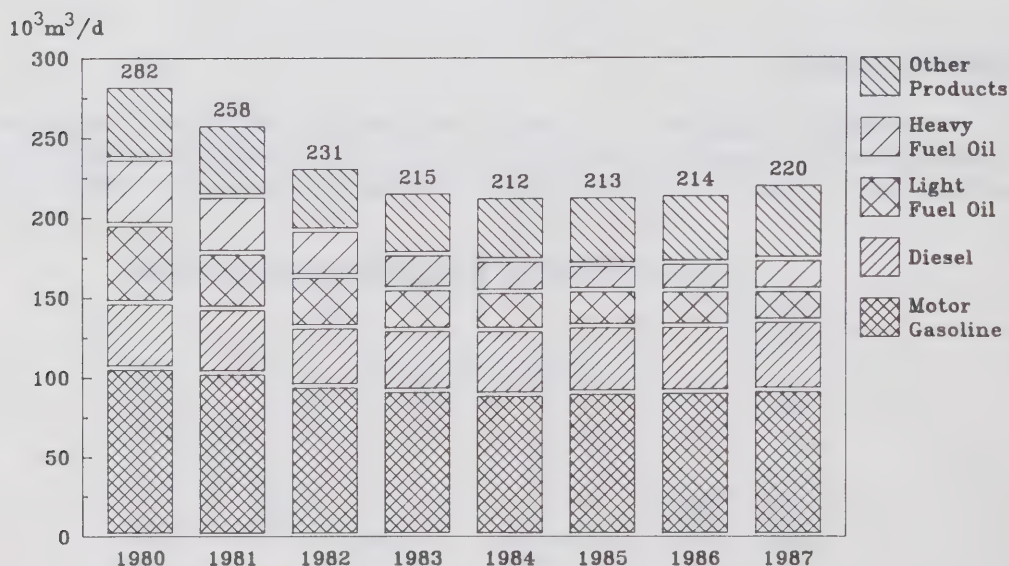


Source: Statistics Canada

After several years of decline during the first half of the 1980s, consumption appears to have bottomed out at the end of 1985 and to have recovered since then. The 1987 level of consumption is roughly equal to that last experienced in late 1982. While the underlying trend in consumption (seasonally adjusted) over the past two years has been modest growth, one to two percentage points below the rate of growth for the overall economy, there were two growth spurts, both occurring during the second quarter. The 1986 anomaly appears to relate to final consumers building inventories to capitalize on price reductions, in response to lower crude oil prices earlier in the year and in anticipation of higher prices during the second half of the year. The 1987 increase was in large part attributable to a spurt in requirements for petrochemical feedstocks (including propanes and butanes) and industrial requirements for asphalt and petroleum coke.

While the rate of growth in demand for "other products" tapered off somewhat during the second half of 1987, it remained stronger than the demand for fuel products as a group, with a year-over-year rate of growth of almost 8%. Much of the increase in this "other product" category during 1987 reflected the strong growth in the economy, as well as increased use of some products for the manufacture of petrochemicals, particularly in Quebec.

CANADIAN OIL PRODUCT SALES 1980 - 1987



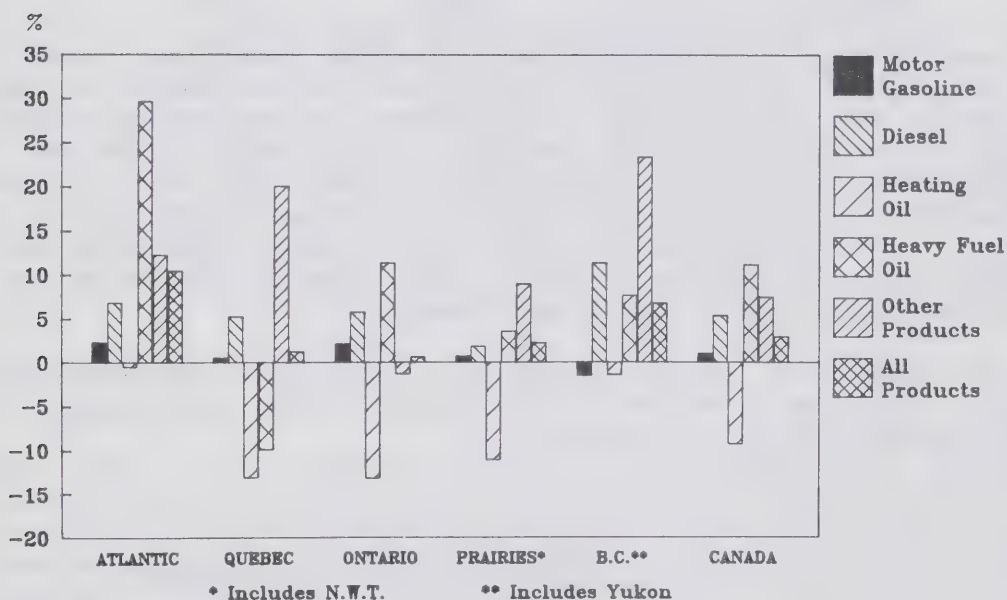
Source: Statistics Canada

Although heavy fuel oil now accounts for less than 10% of total petroleum consumption in Canada, demand jumped by more than 11% in 1987, to 19 $10^3 \text{m}^3/\text{d}$. This reflected increased oil-fired electricity generation requirements in the Atlantic region caused by low water levels, the growing requirements of the forest industry in B.C. and some substitution for natural gas in Ontario, caused by price competition in the industrial market.

Heating oil, which now also accounts for less than 10% of total consumption, was down in all regions of the country by an average of 9%, to $19 \times 10^3 \text{ m}^3/\text{d}$. Most of the decline was concentrated in central Canada, reflecting the milder temperatures and heating efficiency improvements.

The demand for transportation fuels (excluding aviation turbo fuel) was up 2.4%, to over $134 \times 10^3 \text{ m}^3/\text{d}$ in 1987. Consumption of diesel fuel was up by more than 5%, to $41 \times 10^3 \text{ m}^3/\text{d}$, reflecting fairly strong growth in all regions of the country, especially British Columbia, where requirements grew by more than 11% in response to forest and mining industry demand. In contrast, motor gasoline consumption was down in British Columbia but up in all other regions of the country, to an average of $91 \times 10^3 \text{ m}^3/\text{d}$, just over 1% higher than in 1986. The small decline in British Columbia reflected a return to normal consumption levels following the abnormal Expo 86 demand spike.

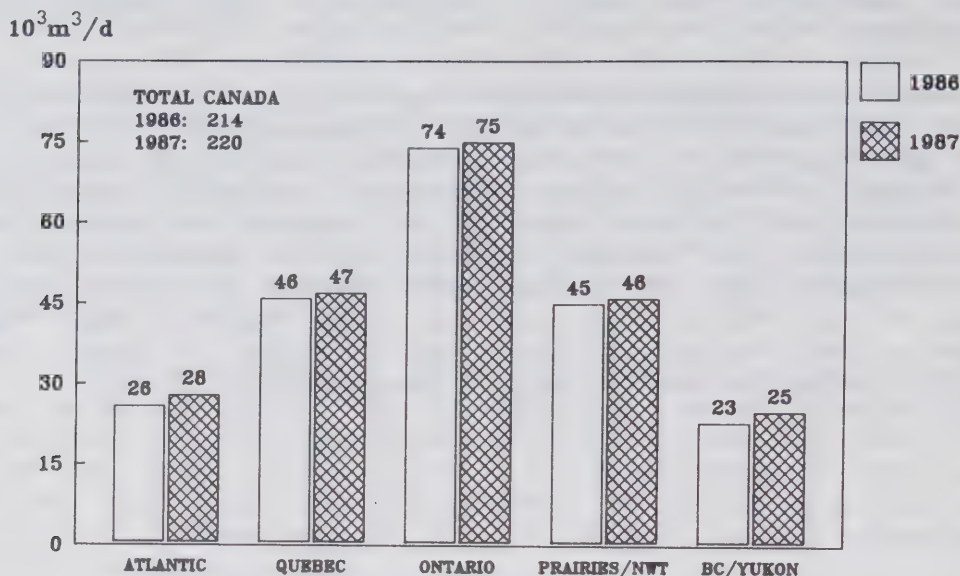
CANADIAN OIL PRODUCT CONSUMPTION 1986 VS 1987



Source: Statistics Canada

Overall product consumption was up in all regions of the country, led by the two extremities, the Atlantic and B.C. regions, up 11 and 7 % respectively. Growth in the interior was more modest, with Ontario experiencing the lowest rate of growth at just under 1 %. Since that province now accounts for about one-third of the petroleum consumption in Canada, the national rate of growth was held down to 3%.

REGIONAL PETROLEUM PRODUCT CONSUMPTION (Annual)



Source: Statistics Canada

In comparison with other major industrialized countries, Canada's growth in consumption of petroleum products was the strongest in 1987. This stands in contrast to 1986, when Canada had one of the lowest growth rates of the industrialized countries. The growth in 1987 was largely attributable to the jump in demand for heavy fuel oil and the "other products" category. The heavy fuel oil increase in Canada was over 11%, while in other Organization for Economic and Cooperative Development (OECD) countries there was a large drop, ranging from 1% in the Pacific rim countries to 14% in the United States.

On the other hand, growth in gasoline consumption was relatively low in Canada. This may have been attributable to increasing gasoline prices in 1987, in part due to tax changes.

Petroleum Product Consumption

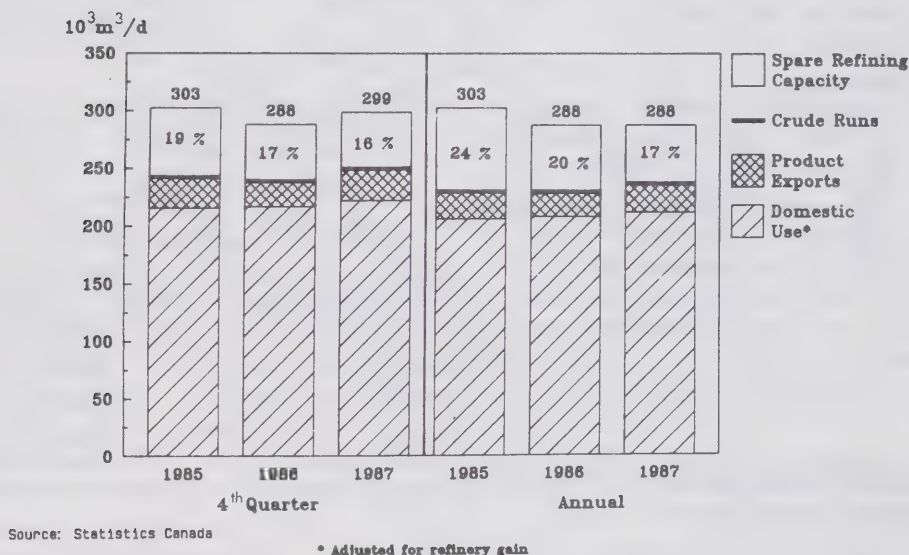
% Change 1986/1987

<u>Product</u>	<u>Canada</u>	<u>U.S.A.</u>	<u>OECD Europe</u>	<u>Pacific</u>
Motor Gasoline	1.1	2.9	2.6	1.9
Middle Distillate	-0.6	-	-0.8	2.8
Heavy Fuel Oil	11.2	-14.3	-3.3	-0.9
Other Products	<u>7.5</u>	<u>4.0</u>	<u>7.6</u>	<u>-3.1</u>
Total	3.0	1.2	0.6	1.6

3. REFINERY UTILIZATION

Crude oil and equivalent run to stills* in the fourth quarter was 248 $10^3\text{m}^3/\text{d}$, up 23 $10^3\text{m}^3/\text{d}$ (10%) over the same period in 1986. Higher petroleum product sales, inventory build and exports all contributed to the increased throughput level. Processing agreements in place with several Canadian refiners contributed to the increase in product exports. One of the refiners involved in processing operated the Come-by-Chance refinery in Newfoundland, which reopened in September after an 11 year shutdown. The operation is primarily intended to supply refined products to a U.S. distributor based in New England and the local Newfoundland market. The start-up of the 16 $10^3\text{m}^3/\text{d}$ refinery was not without problems, one of which included a fire. As a result, the utilization rate declined in the Atlantic, since the plant was operating below the average utilization rate of other refineries in the region.

REFINERY UTILIZATION

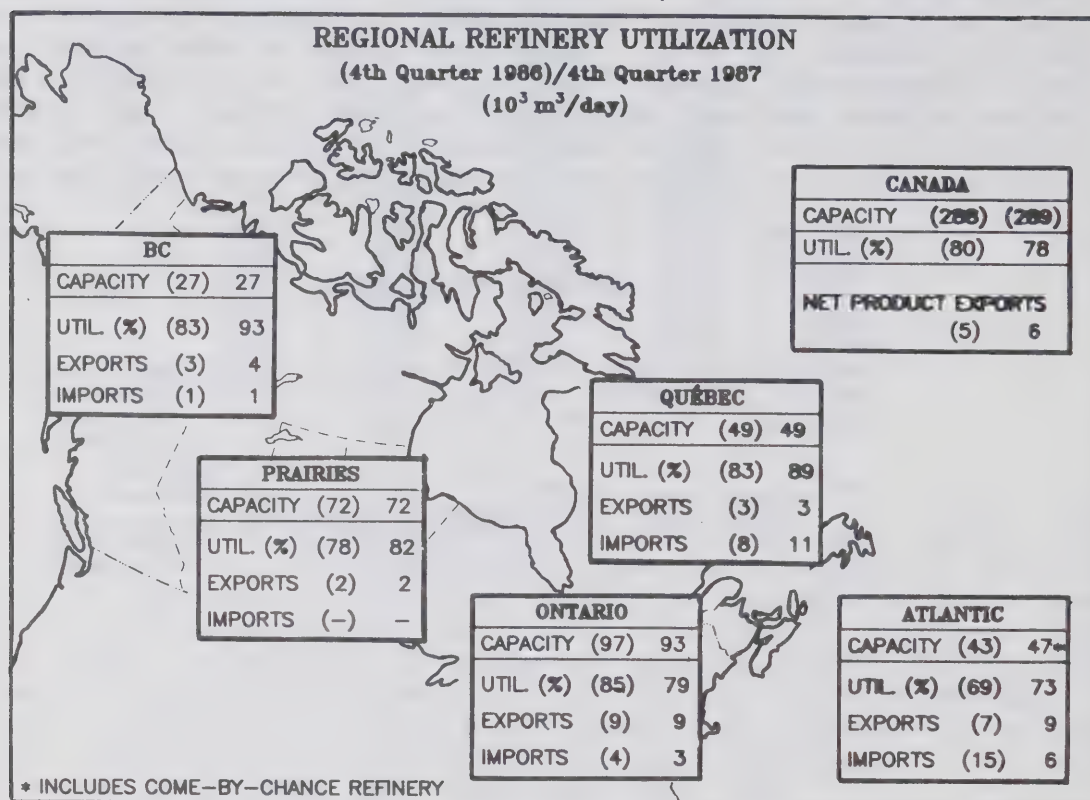


During 1987, the national refinery utilization rate increased 4 percentage points to almost 83%. Total capacity remained the same across the country since the incremental capacity in the Atlantic was offset by a comparable reduction in Ontario, where changes were made to several refineries. Crude oil and equivalent run to stills was 14 $10^3\text{m}^3/\text{d}$ higher than in 1986 and totalled 240 $10^3\text{m}^3/\text{d}$. Increased petroleum product sales (6 $10^3\text{m}^3/\text{d}$), inventories (4 $10^3\text{m}^3/\text{d}$) and additional net exports (1 $10^3\text{m}^3/\text{d}$) all contributed to improved utilization.

The improvement in refinery utilization occurred in all regions. In British Columbia usage was 10 percentage points higher than in 1986 at 93%, reflecting higher consumption and increased exports. Ontario and Quebec followed, with each region increasing 6 percentage points to 85% and 89% respectively, while the Prairies were up 4 percentage points to 82%.

* Calculated based on annual calendar day refining capacity ie. adjusted for downtime for planned refinery maintenance programs.

In British Columbia and Quebec higher utilization rates were attained, with almost no changes in crude receipts, by processing greater volumes of partially processed crude and other refinery feedstocks. The Ontario utilization increase was primarily due to the reduction in refining capacity. As a result of the large drop in the fourth quarter, the annual utilization rate in the Atlantic region was only 3 percentage points higher for the year at 72%.



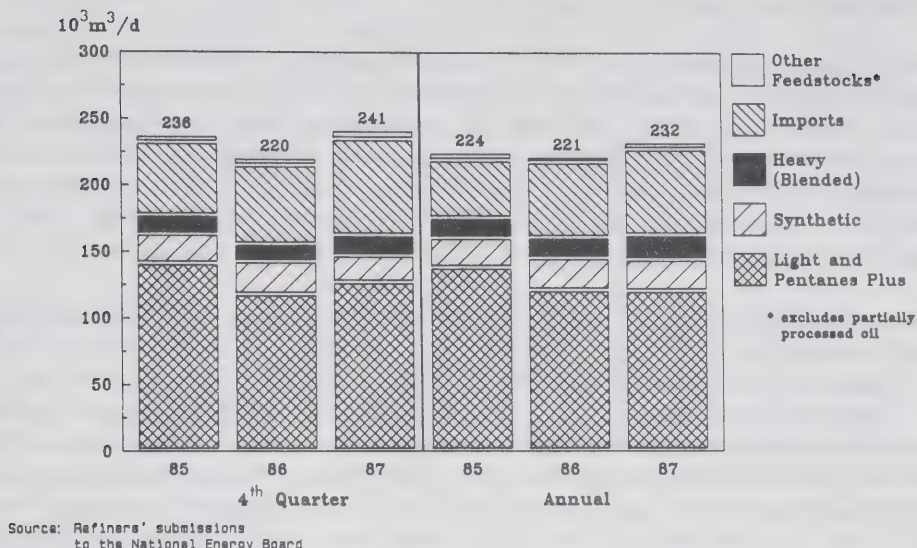
Source: Statistics Canada

4. CRUDE OIL RECEIPTS

Total crude oil deliveries (including gas plant butanes and other feedstocks but excluding partially processed oils) to Canadian refineries during the fourth quarter of 1987 were up 10% ($20 \times 10^3 \text{ m}^3/\text{d}$), to $240 \times 10^3 \text{ m}^3/\text{d}$, from the same period in 1986. Receipts of domestic crude were 5%, or $8 \times 10^3 \text{ m}^3/\text{d}$ higher ($6 \times 10^3 \text{ m}^3/\text{d}$ of light and $2 \times 10^3 \text{ m}^3/\text{d}$ heavy) at $168 \times 10^3 \text{ m}^3/\text{d}$, while imports rose 22% to $72 \times 10^3 \text{ m}^3/\text{d}$. The start-up of the refinery at Come-by-Chance, Newfoundland in October (capacity of $16 \times 10^3 \text{ m}^3/\text{d}$) accounted for much of the fourth quarter increase in imports.

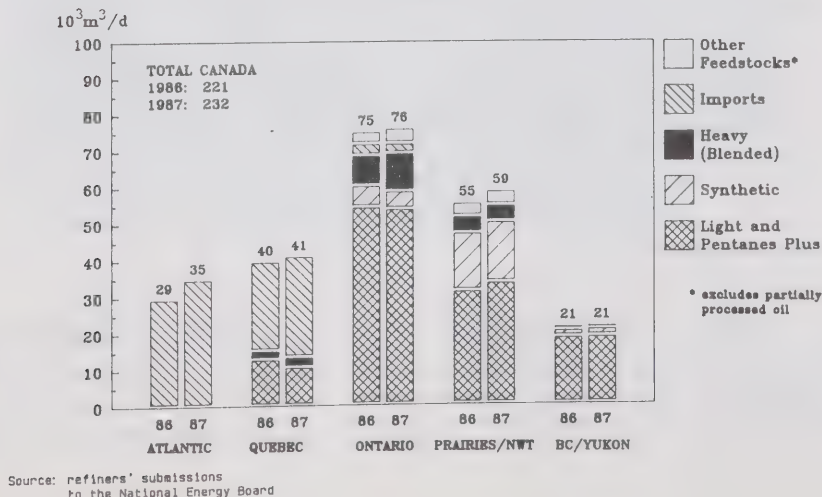
On an annual basis, total receipts in 1987 were up by 5% ($11 \times 10^3 \text{ m}^3/\text{d}$), to $232 \times 10^3 \text{ m}^3/\text{d}$. This increase primarily reflects higher petroleum product consumption (up 3%), the reactivation of the Come-by-Chance refinery and an overall swing in inventories to a net build of almost $6 \times 10^3 \text{ m}^3/\text{d}$. The ratio of foreign to total receipts increased 3 percentage points to 28%. Receipts of domestic heavy crude were up 18% ($3 \times 10^3 \text{ m}^3/\text{d}$) to $18 \times 10^3 \text{ m}^3/\text{d}$, mainly reflecting some substitution of heavy crude for light crude in Ontario, while deliveries of light crude and equivalent remained unchanged at $150 \times 10^3 \text{ m}^3/\text{d}$.

CRUDE OIL AND EQUIVALENT RECEIPTS AT CANADIAN REFINERIES



On a regional basis, Atlantic crude receipts were 20% (6 10³m³/d) higher than in 1986, virtually all imported. This is due to higher petroleum product consumption and the reactivation of the Come-by-Chance refinery, which accounted for nearly half of the increase. In Quebec, receipts were virtually unchanged at 41 10³m³/d, however, the components of the total shifted. Crude oil imports were up 3 10³m³/d, to 28 10³m³/d, while domestic receipts (mainly light crude oil) fell by 2 10³m³/d, to 13 10³m³/d. Part of this shift can be explained by upstream pipeline capacity constraints, which resulted in crude oil originally destined for Quebec being diverted to Ontario refineries. The Prairies had additional domestic receipts of 5 10³m³/d, all light, for a total of 59 10³m³/d. These were used to meet higher product consumption, an inventory build of both products and crude and increased interprovincial transfers (to British Columbia). Total deliveries in Ontario and British Columbia were relatively unchanged from levels in the previous year.

CRUDE OIL AND EQUIVALENT RECEIPTS BY REGION (Annual)



5. PIPELINE UTILIZATION

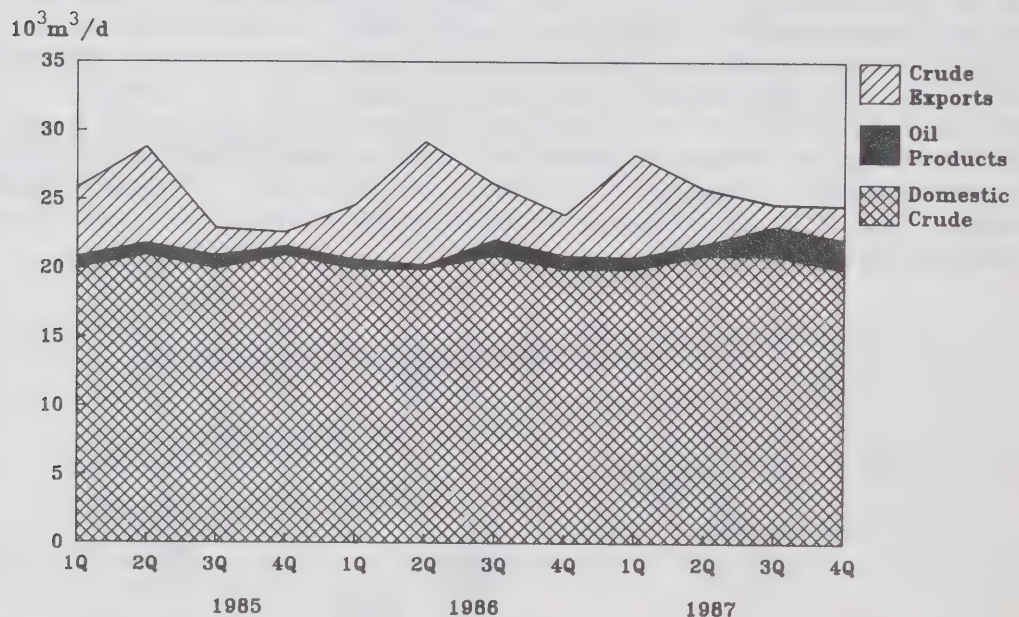
5.1 Trans Mountain Pipe Line

Deliveries of crude oil by Trans Mountain Pipe Line to refiners in British Columbia in the fourth quarter of 1987 remained unchanged, at $20 \times 10^3 \text{ m}^3/\text{d}$, from the same period a year earlier. Movements of refined petroleum products continued to increase, however, with fourth quarter deliveries more than double the previous year. (The annual average of $1.5 \times 10^3 \text{ m}^3/\text{d}$ was also double that of 1986, reflecting the June 1987 opening of a product terminal in central British Columbia.)

Exports of crude oil through the Trans Mountain system dropped again in the last quarter of 1987, reaching seasonal lows of $2.4 \times 10^3 \text{ m}^3/\text{d}$, 18% lower than in the fourth quarter 1986. On an annual basis, 1987 crude exports were down 25% ($1.3 \times 10^3 \text{ m}^3/\text{d}$) reflecting the influence of the Interprovincial Pipe Line (IPL) expansion. Since completion of the IPL expansion, light crude exports via the West Coast have dropped as crude oil prices are generally higher in the U.S. market east of the Rockies. In addition to deliveries to U.S. refiners in Washington state, exports by tanker were made to the U.S. Gulf Coast, Taiwan, Japan and South Korea.

Despite reduced crude exports, the pipeline continued to operate at, or near, capacity levels during 1987. Throughput was 82% of capacity ($26 \times 10^3 \text{ m}^3/\text{d}$), about the same as 1986.

TRANS MOUNTAIN PIPE LINE DELIVERIES



Source: Trans Mountain Pipe Line

In the first quarter of 1988, the National Energy Board heard evidence concerning Trans Mountain's application to expand the pipeline to accommodate a forecast increase in heavy crude oil exports and future movements of methyl-tertiary-butyl-ether (MTBE- a gasoline octane enhancer) and petroleum products.

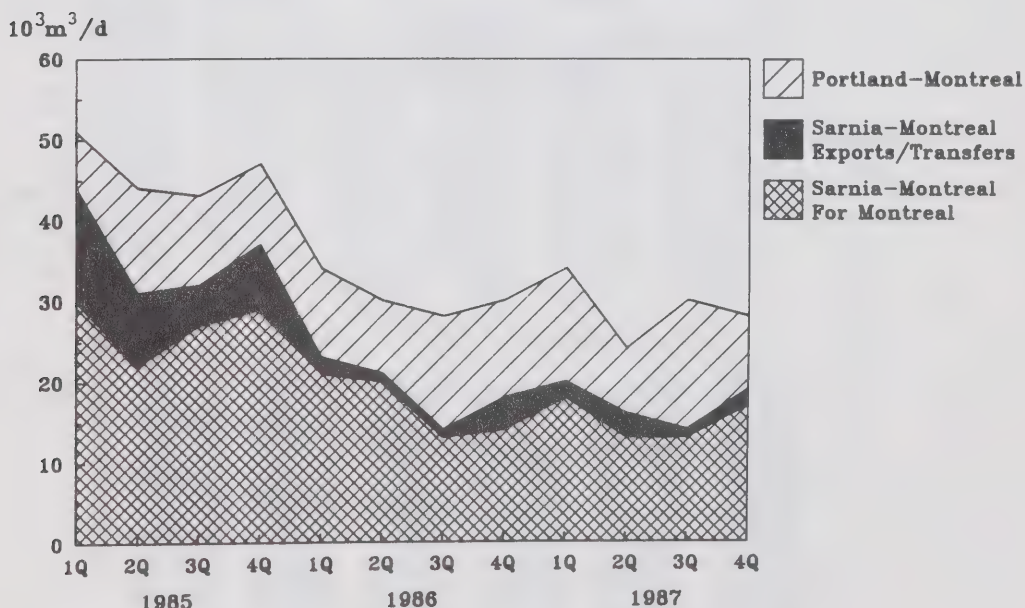
5.2 Pipelines to Montreal

Total deliveries of crude oil to Montreal during the fourth quarter of 1987 were $30 \times 10^3 \text{ m}^3/\text{d}$, unchanged from the same period in 1986. Throughput on the Sarnia-Montreal pipeline and the Portland Pipe Line remained at $19 \times 10^3 \text{ m}^3/\text{d}$ and $11 \times 10^3 \text{ m}^3/\text{d}$, respectively. IPL deliveries in December, however, were over $23 \times 10^3 \text{ m}^3/\text{d}$, one of the highest monthly averages in two years, primarily reflecting deliveries for export, or transshipment to refineries further east. Deliveries for export or transshipment were estimated at about $2 \times 10^3 \text{ m}^3/\text{d}$ for the quarter.

Total receipts by Montreal terminals on an annual basis were down $1 \times 10^3 \text{ m}^3/\text{d}$, to $29 \times 10^3 \text{ m}^3/\text{d}$. Deliveries on the Portland system were $1 \times 10^3 \text{ m}^3/\text{d}$ higher, while the IPL-Sarnia-Montreal link was down $2 \times 10^3 \text{ m}^3/\text{d}$. While crude receipts by Montreal refineries were down slightly in 1987, crude deliveries to refineries further east, or to foreign markets were $4 \times 10^3 \text{ m}^3/\text{d}$, the highest level since 1985, when programs were in place to encourage deliveries of Canadian crude to east coast refineries.

The composition of Sarnia-Montreal deliveries changed slightly from the previous year, with light crude dropping two percentage points to 68% of the total volume. A large portion of the heavy crude deliveries continued to be exported.

CRUDE OIL DELIVERIES TO MONTREAL



Source: Energy, Mines and Resources
and Interprovincial Pipe Line

6. PRODUCTIVE CAPACITY

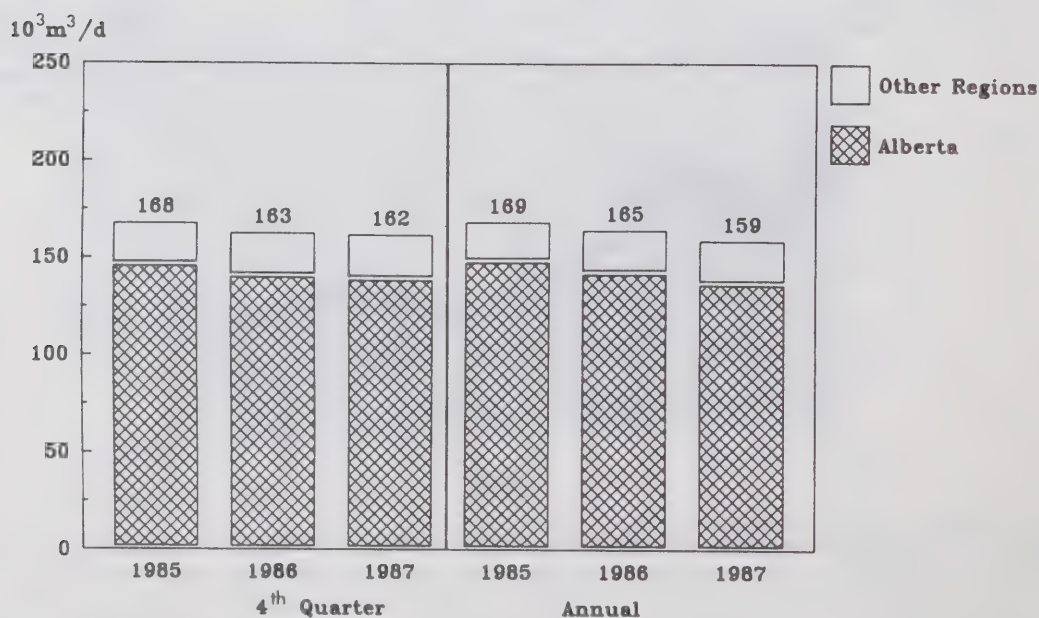
6.1 1987 Review

During 1987, productive capacity of conventional light crude oil decreased 3.3% ($6 \times 10^3 \text{ m}^3/\text{d}$) from the level in 1986, to average $159 \times 10^3 \text{ m}^3/\text{d}$. This small drop was less than anticipated, primarily due to an upward revision of estimated Alberta light crude productive capacity.

The decrease in Alberta's capacity during the first half of 1987 was consistent with the two-year decline in the province's light and medium crude oil supply, dropping more than 5% ($7 \times 10^3 \text{ m}^3/\text{d}$), from the same period in 1986. However, in the second half, actual light crude production exceeded estimated capacity for much of the period, primarily as a result of the virtual elimination of physical and institutional barriers to crude marketing. The completion of the Interprovincial Pipe Line expansion and debottlenecking program along with the modification of Alberta's prorationing system permitted, for the first time since the early 1980s, the testing of productive capacity estimates. As a result, productive capacity was revised upward in the second half, to $137 \times 10^3 \text{ m}^3/\text{d}$, a drop of only 2.5% from 1986 (unrevised). This was the smallest decline in productive capacity in several years.

In contrast to the two previous years, productive capacity in Alberta was the highest in the fourth quarter, at $139 \times 10^3 \text{ m}^3/\text{d}$, less than 1% lower ($1 \times 10^3 \text{ m}^3/\text{d}$) than in the fourth quarter of 1986. Total light capacity in other producing regions continued at $23 \times 10^3 \text{ m}^3/\text{d}$, basically unchanged since early 1986. This supply was made up of $6 \times 10^3 \text{ m}^3/\text{d}$ from British Columbia, $11 \times 10^3 \text{ m}^3/\text{d}$ from Saskatchewan, $2 \times 10^3 \text{ m}^3/\text{d}$ from Manitoba and $4 \times 10^3 \text{ m}^3/\text{d}$ from the Northwest Territories.

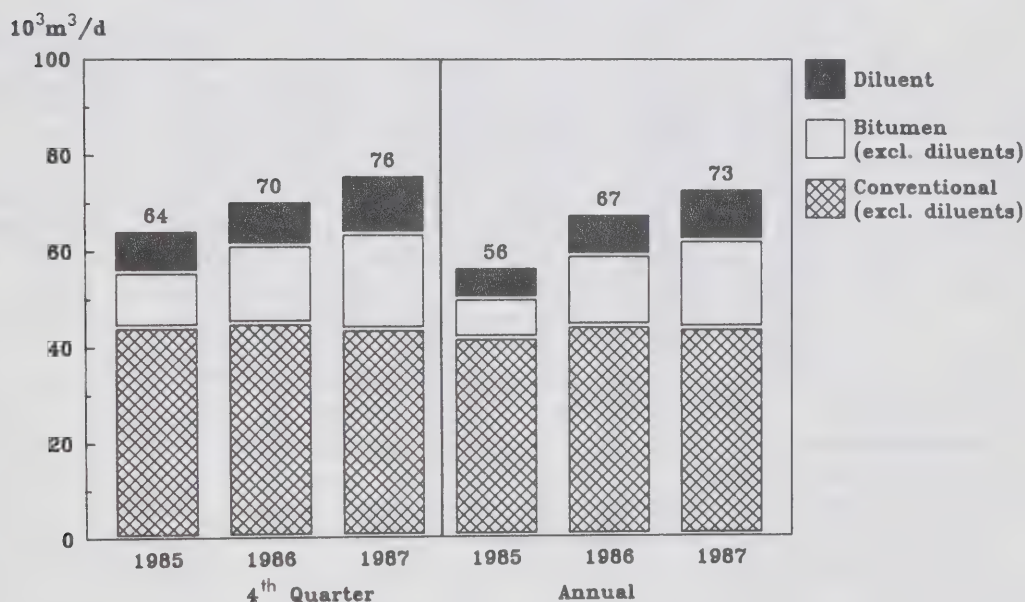
CONVENTIONAL LIGHT AND MEDIUM CRUDE PRODUCTIVE CAPACITY



On an annual basis, overall "neat" heavy crude oil productive capacity increased in 1987 to 62 $10^3\text{m}^3/\text{d}$, 3 $10^3\text{m}^3/\text{d}$ higher than in 1986. As the industry became more optimistic on the outlook for crude prices, bitumen activity picked up, although at a slower pace than in 1984 and 1985. While conventional heavy crude productive capacity of 44 $10^3\text{m}^3/\text{d}$ was unchanged from 1986, supply of the other heavy crude component, bitumen, rose to 18 $10^3\text{m}^3/\text{d}$, an increase of 24% or 4 $10^3\text{m}^3/\text{d}$. With diluent needs also higher by 2 $10^3\text{m}^3/\text{d}$, to 11 $10^3\text{m}^3/\text{d}$, blended heavy crude supply reached 73 $10^3\text{m}^3/\text{d}$ or about 27% of total crude oil capacity.

Heavy crude supply developments in the fourth quarter were similar to the annual trend. Conventional crude was marginally higher at 45 $10^3\text{m}^3/\text{d}$, while bitumen supply was up 24% to 20 $10^3\text{m}^3/\text{d}$. On a blended basis, heavy crude capacity was up 6 $10^3\text{m}^3/\text{d}$, to 76 $10^3\text{m}^3/\text{d}$ - a record level.

HEAVY CRUDE PRODUCTIVE CAPACITY



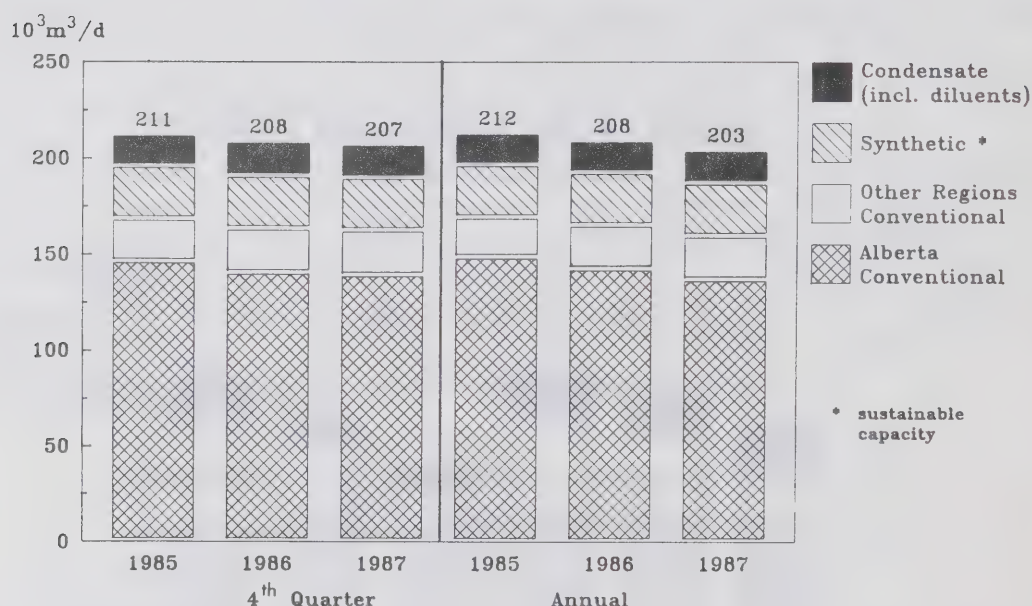
Source: National Energy Board

Pentanes plus supply, on an annual basis, was up 1 $10^3\text{m}^3/\text{d}$ to 17 $10^3\text{m}^3/\text{d}$. However with the increased diluent demand, supply available for refinery feedstock and other purposes fell 20%, to 6 $10^3\text{m}^3/\text{d}$.

Assuming an average forty day maintenance period each year, sustainable* capacity of synthetic crude plants was $28 \times 10^3 \text{ m}^3/\text{d}$ (Syncrude $19 \times 10^3 \text{ m}^3/\text{d}$, Suncor $9 \times 10^3 \text{ m}^3/\text{d}$), unchanged from the previous year.

Productive capacity of all domestic crude oil declined less than 1% from 1986, to $266 \times 10^3 \text{ m}^3/\text{d}$. This small drop in productive capacity was less than anticipated, primarily due to the smaller than expected drop in light and medium crude oil, although the decline in light crude supply continues to outstrip additions to heavy crude capacity. (See Annex I for more details.)

TOTAL LIGHT CRUDE OIL AND EQUIVALENT PRODUCTIVE CAPACITY



Source: National Energy Board

* Annual calendar day synthetic plant capacity, ie. adjusted for downtime for planned maintenance.

6.2 1988 Forecast

According to a 1988 forecast prepared by the National Energy Board, there should be little overall change to total crude oil available supply from the 1987 level. Total supply is forecast at $268 \times 10^3 \text{ m}^3/\text{d}$ compared to $267 \times 10^3 \text{ m}^3/\text{d}$ in 1987. Conventional light, medium and equivalent crude productive capacity for 1988 is expected to be $192 \times 10^3 \text{ m}^3/\text{d}$, a $2 \times 10^3 \text{ m}^3/\text{d}$ drop from 1987. Alberta conventional light capacity is forecast at $135 \times 10^3 \text{ m}^3/\text{d}$, only a slight decrease of $1 \times 10^3 \text{ m}^3/\text{d}$ (or 0.8%) from 1987, reflecting the previously mentioned upward revision in capacity. (The 1988 Alberta capacity was increased by $4 \times 10^3 \text{ m}^3/\text{d}$.) Capacity from other regions should remain at $23 \times 10^3 \text{ m}^3/\text{d}$.

"Neat" heavy crude productive capacity is expected to increase moderately from 1987, to $64 \times 10^3 \text{ m}^3/\text{d}$, as a result of anticipated increments to bitumen recovery projects later in the year. Conventional heavy crude should remain virtually unchanged at $43 \times 10^3 \text{ m}^3/\text{d}$; however, bitumen production is anticipated to be $21 \times 10^3 \text{ m}^3/\text{d}$, an increase of $2 \times 10^3 \text{ m}^3/\text{d}$. This will in turn increase diluent requirements by $1 \times 10^3 \text{ m}^3/\text{d}$ to $12 \times 10^3 \text{ m}^3/\text{d}$. Therefore, on a blended basis, total heavy crude productive capacity is expected to reach $76 \times 10^3 \text{ m}^3/\text{d}$, $3 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1987. (Annex I provides a detailed outline of 1988 available supply.)

6.3 NewGrade Upgrader

In September 1988, NewGrade Energy Inc. will start operating Canada's first heavy crude oil upgrader, currently under construction in Regina, Saskatchewan. NewGrade, an equal partnership between the Government of Saskatchewan and Consumers Cooperative Refineries Limited (Co-op) of Regina, will convert heavy crude oil into finished products and a light crude blend that can be used by other refiners. The project, costing about \$700 million, is financed 20% by equity and 80% by loans guaranteed by the Federal and Saskatchewan Governments.

The upgrader is being integrated with the current Co-op refinery in Regina. Although the total output of the Co-op refinery (about $7 \times 10^3 \text{ m}^3/\text{d}$) is not expected to change, the crude to be processed will. The refinery, now receiving light crude oil (mostly from Alberta), will switch to a heavier crude consisting of Lloydminster Blend and Fosterton, both Saskatchewan crudes that are currently being exported. The upgrader, designed to handle $8 \times 10^3 \text{ m}^3/\text{d}$ of the heavy crude, will supply the refinery with its light crude requirements. The balance of the synthetic crude produced would be available to other refineries further east on the Interprovincial pipeline system.

The new facility will offset a portion of the forecast decline in conventional light crude oil productive capacity. Saskatchewan producers of heavy crude are hoping to be able to eventually supply the new complex with incremental production, in order to maintain current export sales.

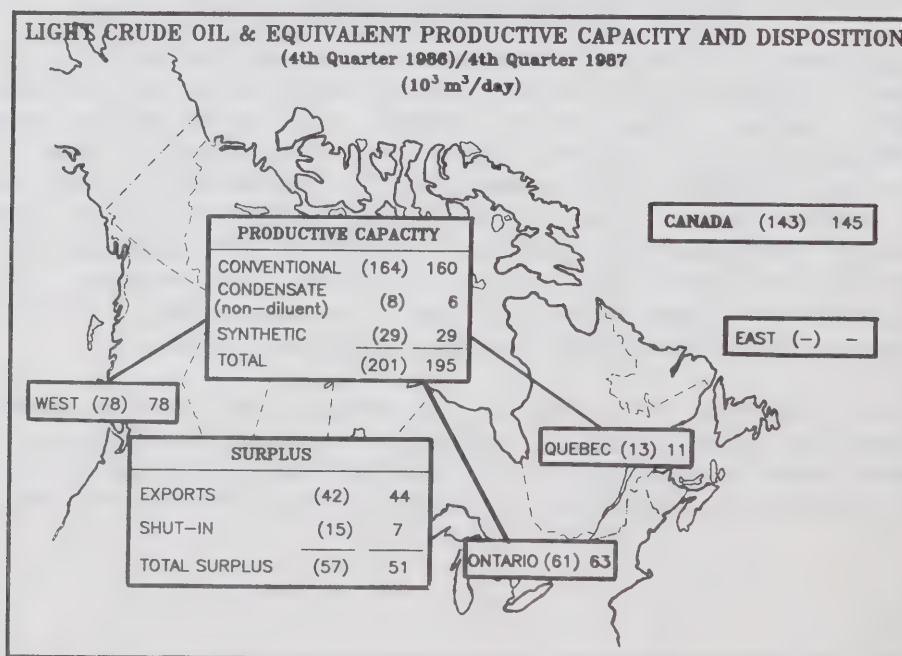
7. PRODUCTION

7.1 1987 Review

As explained in section 6.1, in 1987, for the first time in four years, productive capacity was fully tested on a sustained basis. As a result total production increased 4% ($8 \times 10^3 \text{ m}^3/\text{d}$) to $258 \times 10^3 \text{ m}^3/\text{d}$, the highest level since 1974. With the expanded IPL system, producers and refiners were able to negotiate for volumes that refiners knew could be delivered. Prior to June of 1987, sales were often conditional upon available pipeline space or not made at all. However, bottlenecks began appearing once again in the IPL system in late 1987).

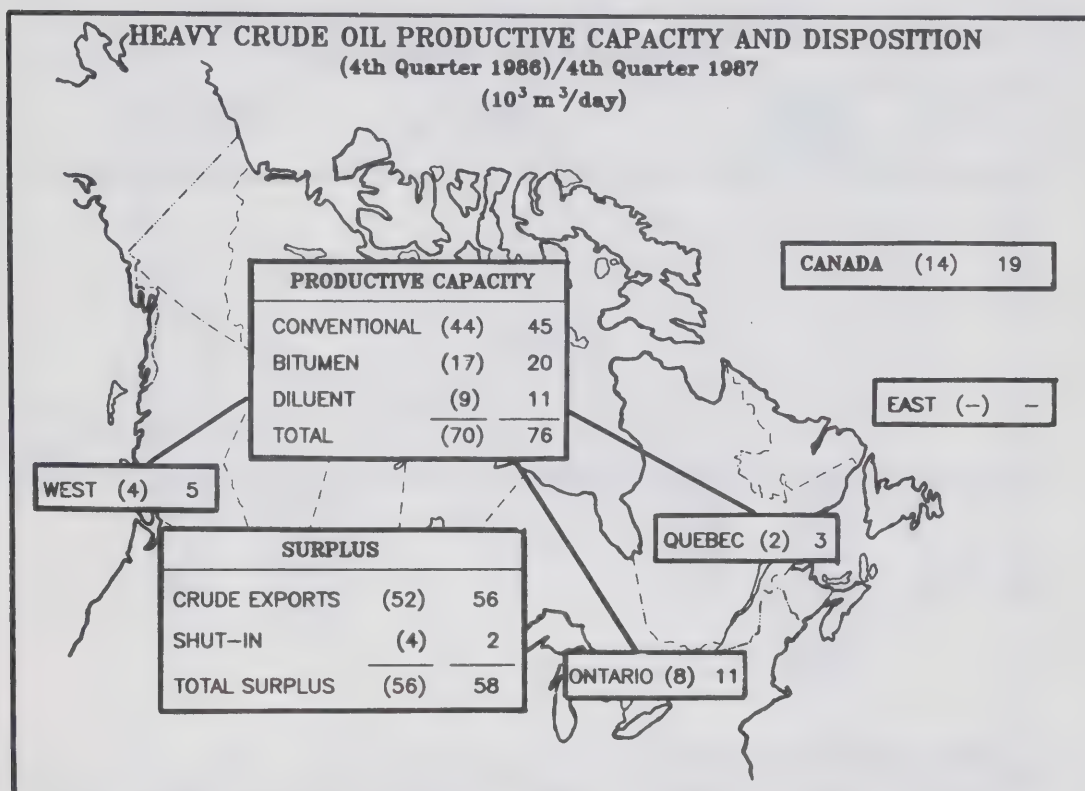
Conventional light crude production reached $138 \times 10^3 \text{ m}^3/\text{d}$, $4 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1986. Except for very small volumes in November and December, the shut-in of $7 \times 10^3 \text{ m}^3/\text{d}$ was all registered in the first half of the year, and was less than half the 1986 level of $16 \times 10^3 \text{ m}^3/\text{d}$. The virtual elimination of physical and institutional constraints allowed Alberta producers to produce at capacity levels in the second half of the year. As a result, Alberta production was at $137 \times 10^3 \text{ m}^3/\text{d}$, up 9% ($11 \times 10^3 \text{ m}^3/\text{d}$) from the second half of 1986.

Synthetic crude oil production was down marginally in 1987, to $29 \times 10^3 \text{ m}^3/\text{d}$, about 2% less than the 1986 record level. After a record first half of over $31 \times 10^3 \text{ m}^3/\text{d}$, production dropped over 18% ($6 \times 10^3 \text{ m}^3/\text{d}$) in the second half, primarily due to a major fire in October at the Suncor facilities in Fort McMurray, which resulted in the plant not producing for the rest of the year. During this time, Syncrude was also producing at a reduced level due to a refinery turnaround, which had been planned following sustained production at full capacity for most of the year. The combined effect was synthetic output of $24 \times 10^3 \text{ m}^3/\text{d}$ in the fourth quarter, the lowest level since the first quarter of 1986.



SOURCE: National Energy Board

In the heavy crude category, shut-in was reduced by half in 1987, dropping from $4 \times 10^3 \text{ m}^3/\text{d}$ in 1986 to $2 \times 10^3 \text{ m}^3/\text{d}$. Blended production increased by 11% ($7 \times 10^3 \text{ m}^3/\text{d}$), to $73 \times 10^3 \text{ m}^3/\text{d}$. In contrast to the historical trend, when most incremental heavy production was exported, the split was almost 50/50 between the domestic and export markets in 1987. Both Ontario and western Canadian refiners increased their take of domestic heavy crude. (See Annex II for more annual details.)



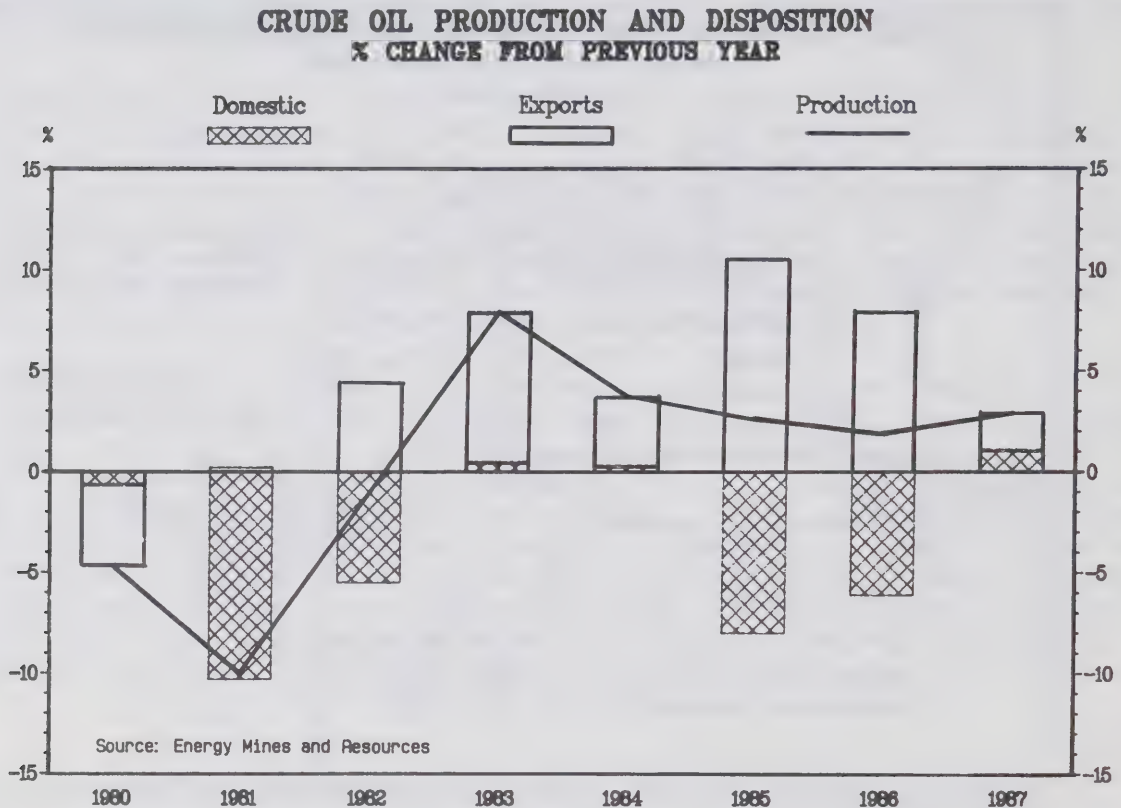
SOURCE: National Energy Board

The IPL system was operating at close to capacity throughout most of the year, however the Rangeland and Trans Mountain systems both had between 2 and $4 \times 10^3 \text{ m}^3/\text{d}$ of spare capacity.

In the fourth quarter, total production of crude oil jumped significantly from the 1986 level, reaching $264 \times 10^3 \text{ m}^3/\text{d}$, up $12 \times 10^3 \text{ m}^3/\text{d}$. Total shut-in fell substantially, to $3 \times 10^3 \text{ m}^3/\text{d}$ from $23 \times 10^3 \text{ m}^3/\text{d}$, of which almost $20 \times 10^3 \text{ m}^3/\text{d}$ had been light crude.

Much of the incremental fourth quarter light crude production was sold to the United States, reflecting continued demand by U.S. refiners.

The following graph illustrates the percentage change in production levels on a year-over-year basis, as well as the annual percentage change in domestic and export demand. It demonstrates the continued increase in exports, as compared with reduced deliveries to domestic markets since 1982. With domestic consumption falling in the early 1980s and shut-in increasing, the federal government loosened export controls, particularly on light crude, in 1983. In 1987, however, for only the second time this decade, domestic demand increased reflecting the rise in product consumption.



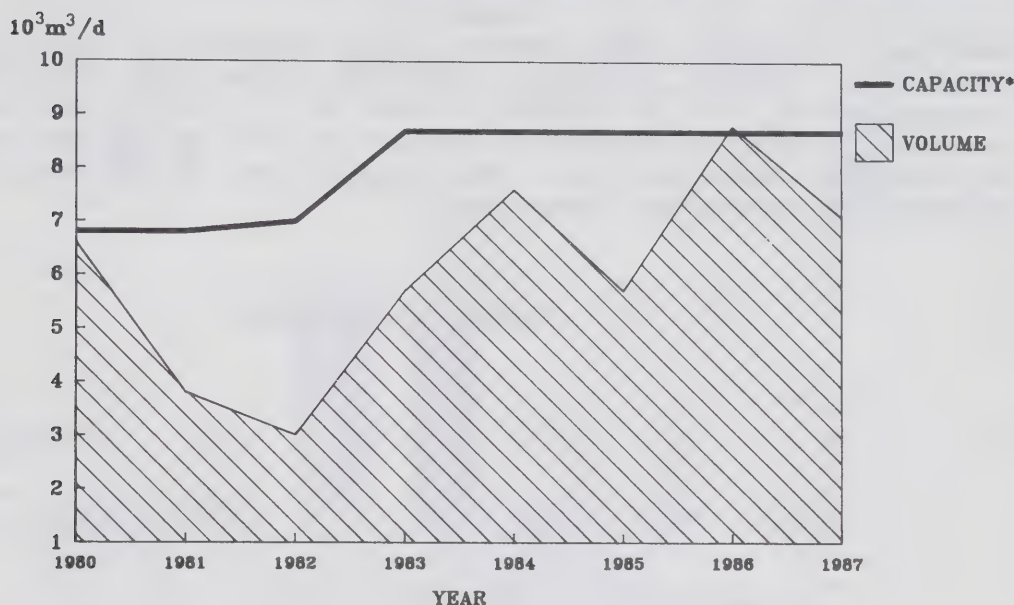
7.2 Suncor Oil Sands Anniversary

The Suncor synthetic crude plant, which along with the Syncrude plant, now represents 15% of the country's light and equivalent production, celebrated twenty years of operation in 1987. Following three years of construction, the Suncor oil sands plant (formally Great Canadian Oil Sands) opened in September 1967 at a design capacity of $7.1 \times 10^3 \text{ m}^3/\text{d}$, a level of production the company did not reach for a number of years.

Although the concept of turning oil sands into crude had been proven in the 1920s, the reality of doing so in a temperate climate was another matter. Suncor pioneered every aspect of the synthetic process, from mining the sticky oil sands, transporting it to the extraction plant, and then converting it to synthetic crude. Every step turned out to be a challenge and a new discovery. Eventually, the technology was in place to produce at full capacity on a regular basis such that, by 1982, the plant design capacity was increased to $9.2 \times 10^3 \text{ m}^3/\text{d}$.

Since 1982, when a major fire partially shut down the plant for almost eight months, the Suncor production record has gradually improved. The drops in 1981 and 1985 production were both due to major maintenance shutdowns.

SUNCOR SYNTHETIC CRUDE OIL PRODUCTION



Source: EMR/Suncor

* Adjusted for Planned Maintenance

For the last two years, Suncor production has generally been close to capacity. However, a major fire in mid-October completely shut down production for the balance of the year. Although partial production will resume in late January 1988, the plant is not expected to be running at 100% of capacity until March.

7.3 1988 Synthetic Outlook

Synthetic crude production is expected to increase slightly in 1988, even if full production does not resume at Suncor until March. During the shutdown, Suncor proceeded with a turnaround originally planned for 1988 and, assuming no additional problems, full production of close to 9 $10^3\text{m}^3/\text{d}$ is expected for the remainder of the year. Meanwhile Syncrude is continuing with debottlenecking and capacity addition work. A large part of the debottlenecking has been completed and sustainable production capacity (includes planned downtime) has increased to 21 $10^3\text{m}^3/\text{d}$, from 19 $10^3\text{m}^3/\text{d}$. By year end, the plant's expansion should provide for a further 4 $10^3\text{m}^3/\text{d}$, for total sustained output of almost 25 $10^3\text{m}^3/\text{d}$. With both synthetic plants in operation, regular synthetic crude production by year end should reach close to 34 $10^3\text{m}^3/\text{d}$. Once the Newgrade upgrader starts production (see previous section) an additional 8 $10^3\text{m}^3/\text{d}$ of synthetic crude should also be available.

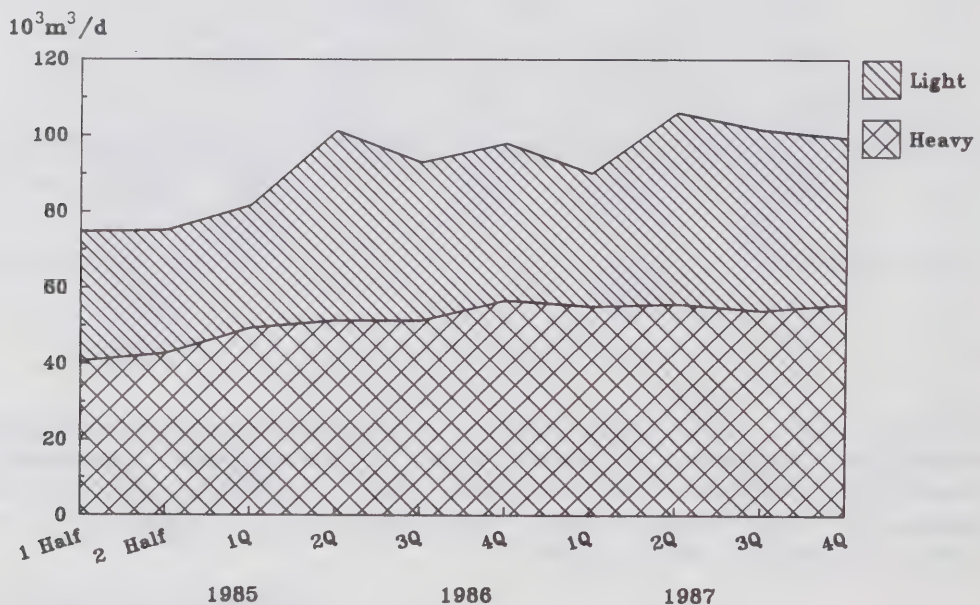
8. EXPORTS AND IMPORTS

8.1 Crude Oil Exports

The sale of crude oil to foreign markets continued to grow in 1987, reaching almost $99 \times 10^3 \text{ m}^3/\text{d}$, an increase of $6 \times 10^3 \text{ m}^3/\text{d}$ over 1986, with the incremental exports evenly divided between light and heavy crude. Exports represented 40% of Canadian crude oil production, 3 percentage points higher than last year.

Light and equivalent crude exports, which accounted for 45% of the total, reached $44 \times 10^3 \text{ m}^3/\text{d}$, almost $3 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1986. Heavy crude exports, at $55 \times 10^3 \text{ m}^3/\text{d}$ were up $3 \times 10^3 \text{ m}^3/\text{d}$. Much of the increase in exports occurred in the second half of the year as a result of the IPL expansion and the introduction of Alberta's modified prorationing system (See Production).

CRUDE OIL EXPORTS

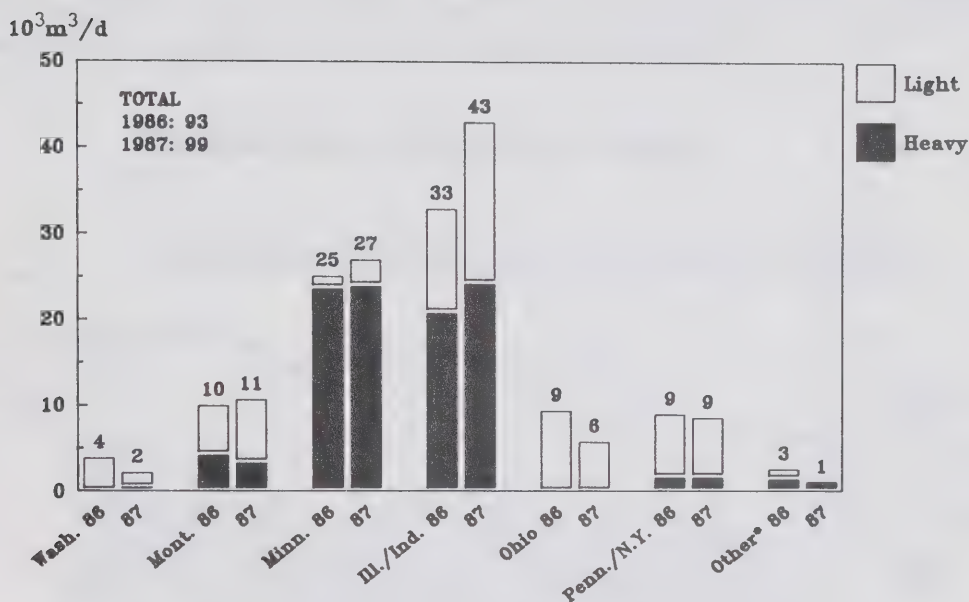


Source: National Energy Board

Direct pipeline exports to the United States were $97 \times 10^3 \text{ m}^3/\text{d}$ in 1987, a $7 \times 10^3 \text{ m}^3/\text{d}$ increase over 1986. As in the past, the Minnesota and Chicago markets accounted for the bulk of Canadian crude receipts in the United States, with over 65% of exports being delivered to those refining centres. Exports to the Chicago market increased almost $9 \times 10^3 \text{ m}^3/\text{d}$, of which $6 \times 10^3 \text{ m}^3/\text{d}$ were light or equivalent crude. The growth in the Chicago market reflected increasing product demand and declining U.S. indigenous production.

Total crude exports to the United States, which include deliveries via the ports of Montreal and Vancouver, were over $98 \times 10^3 \text{ m}^3/\text{d}$, up $8 \times 10^3 \text{ m}^3/\text{d}$ from 1986, and accounted for 13% of U.S. crude oil imports. Canada was the second largest supplier of crude oil to the United States in 1987 with Saudi Arabia slightly ahead, and Mexico slightly behind.

LIGHT AND HEAVY CRUDE OIL EXPORTS BY DESTINATION (Annual)



Source: National Energy Board

* Includes Offshore

Light crude exports to Chicago area refineries jumped 55%, or $6 \times 10^3 \text{ m}^3/\text{d}$, to $17 \times 10^3 \text{ m}^3/\text{d}$. Minnesota and Montana refiners also increased their receipts of light crude, by $2 \times 10^3 \text{ m}^3/\text{d}$ in each case. Exports to Toledo, Ohio and Anacortes, Washington dropped 40% ($5 \times 10^3 \text{ m}^3/\text{d}$) to $8 \times 10^3 \text{ m}^3/\text{d}$, offsetting part of the above increases.

Heavy crude exports by pipeline averaged $50 \times 10^3 \text{ m}^3/\text{d}$, of which Twin Cities received $24 \times 10^3 \text{ m}^3/\text{d}$, Chicago $22 \times 10^3 \text{ m}^3/\text{d}$, up $3 \times 10^3 \text{ m}^3/\text{d}$, and Montana the balance, up $1 \times 10^3 \text{ m}^3/\text{d}$.

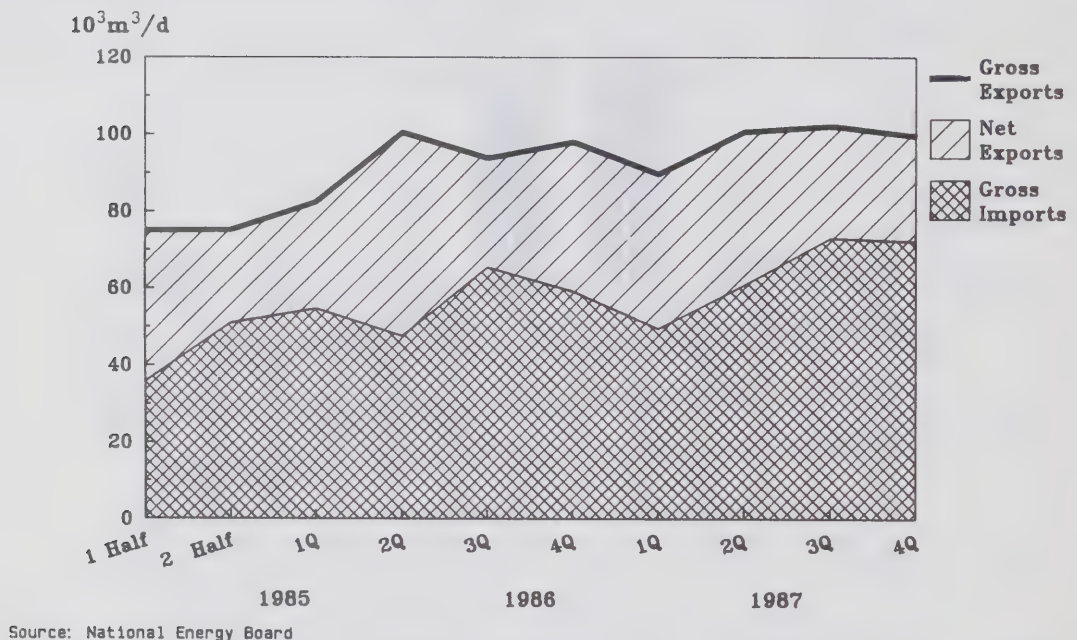
Offshore exports, which were primarily in the heavy crude category, were close to $1 \times 10^3 \text{ m}^3/\text{d}$, marginally higher from 1986. Some offshore destinations included Japan, Taiwan, South Korea and Holland.

Light crude exports are not expected to increase over the next few years, as light crude supply is forecast to be flat or declining. Only heavy crude export growth is expected in the future.

8.2 Crude Oil Imports

Gross crude oil imports for 1987 were $65 \times 10^3 \text{ m}^3/\text{d}$, $8 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1986. In addition to higher product demand, a portion of these imports were to meet the requirements of the Come-by-Chance Newfoundland refinery that was reactivated in September (See Refinery Utilisation). Oil import dependence* in Canada, expressed as a percentage of domestic consumption, increased to 27% during 1987 from 24% in 1986.

CRUDE OIL EXPORTS AND IMPORTS



8.3 Petroleum Product Trade

As a result of a steep increase in product imports, the net fourth quarter product surplus on a national basis decreased to $2 \times 10^3 \text{ m}^3/\text{d}$ from $6 \times 10^3 \text{ m}^3/\text{d}$ in the fourth quarter of 1986.

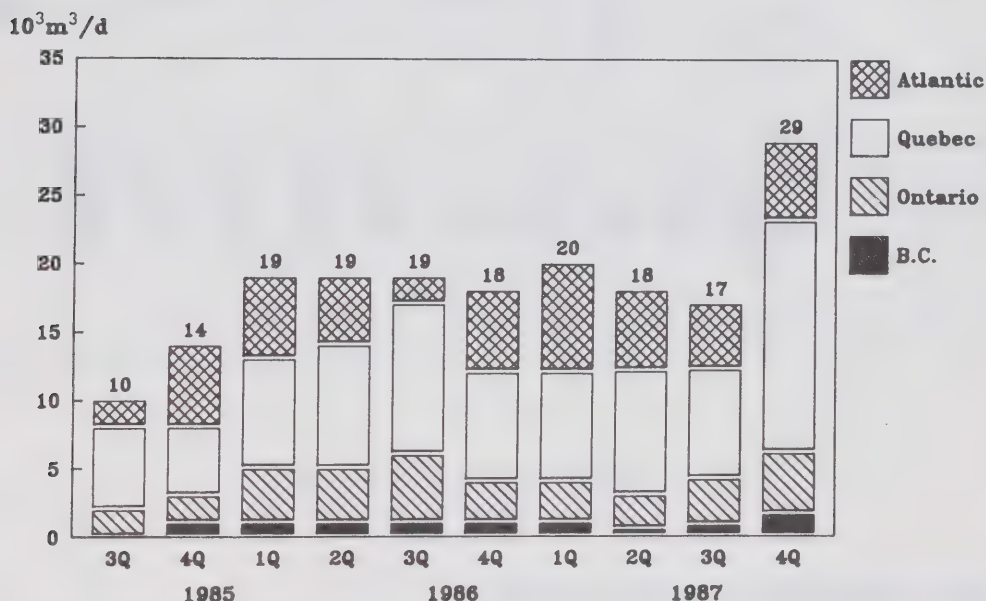
Imports of petroleum products were sharply higher in the fourth quarter, at $29 \times 10^3 \text{ m}^3/\text{d}$, $11 \times 10^3 \text{ m}^3/\text{d}$ higher than in 1986. Virtually all of the increase was in Quebec and Ontario. Ontario imports rose 50% to $4.5 \times 10^3 \text{ m}^3/\text{d}$, while in Quebec imports more than doubled to $17 \times 10^3 \text{ m}^3/\text{d}$ as refiners and marketers took advantage of Canada/United States price differences. A large portion of these imports were middle distillates, including stove oil and kerosene, as prices were weak due to a mild winter in Europe and parts of North America.

* Crude oil imports less net refined oil product exports.

The increased movement of products into Canada, which were obtained 50% from the United States, reflected falling crude oil prices which flowed through to lower product costs faster in the United States as a result of shorter supply lines, and different accounting and marketing systems. Imported products were also more attractive because of the strengthening of the Canadian dollar versus the U.S. currency, which resulted in slightly lower costs to the importer.

Although the number of independents involved in the import movements has grown, refiners took delivery of most of the products. Imports were largely used to build inventories, since consumption in central Canada was basically unchanged on a year over year basis.

GROSS REGIONAL PETROLEUM PRODUCT IMPORTS

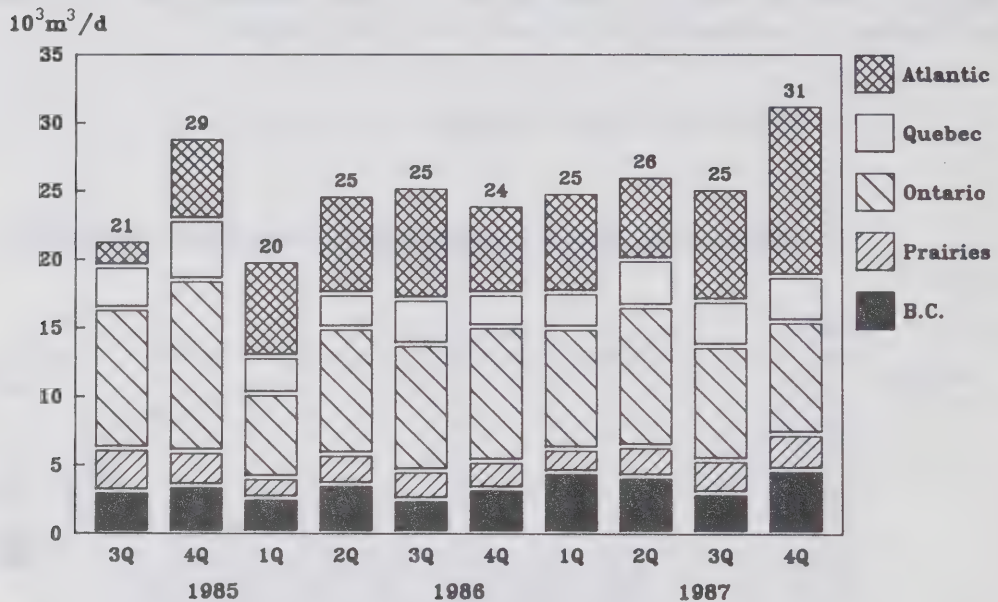


Source: Statistics Canada

Fourth quarter exports of petroleum products were $7 \times 10^3 \text{m}^3/\text{d}$ higher than at the same time in 1986, with the Atlantic region accounting for 85% of the increase. The start-up of the Come-by-Chance refinery, where most of the production was slated for the U.S. market, and processing arrangements of other refiners in the region contributed to higher exports. In other regions, exports in total were 1 to $2 \times 10^3 \text{m}^3/\text{d}$ higher, except in Ontario where they fell by the same volume.

On an annual basis, the net export position improved slightly, to over 5 $10^3\text{m}^3/\text{d}$, from under 5 $10^3\text{m}^3/\text{d}$ in 1986. This was due to an increase of over 3 $10^3\text{m}^3/\text{d}$ in exports, to 27 $10^3\text{m}^3/\text{d}$, and a smaller increase in imports, to almost 22 $10^3\text{m}^3/\text{d}$.

GROSS REGIONAL PETROLEUM PRODUCT EXPORTS



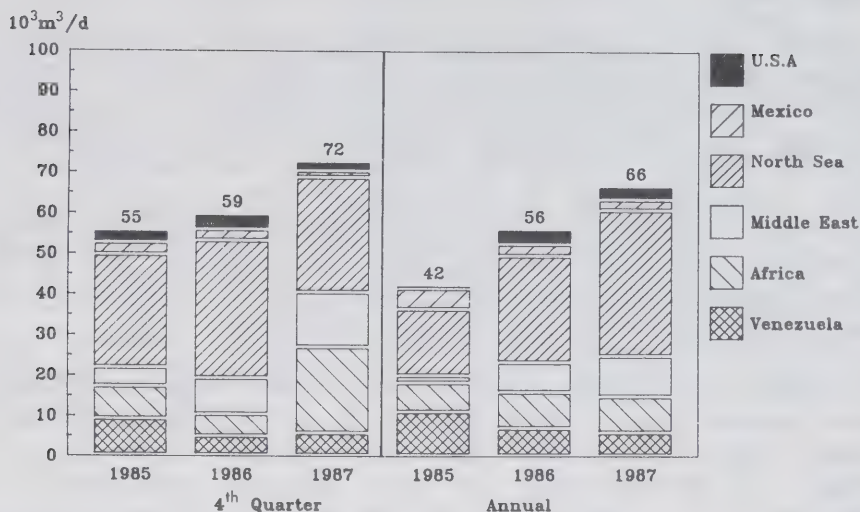
Source: Statistics Canada

9. COMPOSITION OF CRUDE OIL IMPORTS

In 1987 OPEC-supplied crude oil was slightly higher in volumetric terms, at 24.5 $10^3\text{m}^3/\text{d}$, although the cartel's market share was two percentage points less (38%) than in 1986. The composition of crude oil imports, however, changed substantially during the year. While imports from Saudi Arabia and Africa rose marginally, Venezuelan and Iranian deliveries fell by 1 $10^3\text{m}^3/\text{d}$ and 1.5 $10^3\text{m}^3/\text{d}$, to 6 $10^3\text{m}^3/\text{d}$ and 3 $10^3\text{m}^3/\text{d}$, respectively. Imports from "other Middle East" countries e.g. Iraq, had the largest growth, up from 7 $10^3\text{m}^3/\text{d}$ in 1986 to over 10 $10^3\text{m}^3/\text{d}$ in 1987. As a result, imports from OPEC Middle East countries represented 40% of total OPEC supply to Canada, an increase of 8 percentage points.

The North Sea remained the major source of supply, representing 52% (34 $10^3\text{m}^3/\text{d}$) of imports, in comparison with 47% a year ago. Imports from Mexico and the United States remained at about 2.5 $10^3\text{m}^3/\text{d}$ and 3 $10^3\text{m}^3/\text{d}$, respectively.

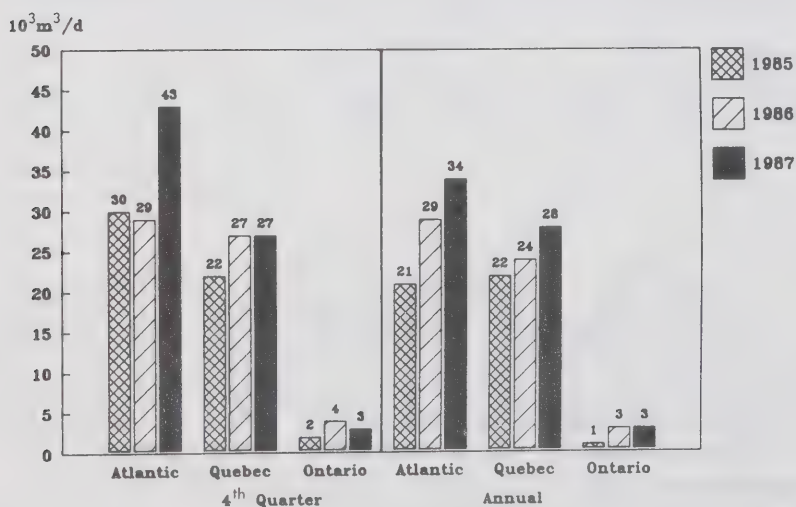
SOURCES OF CRUDE OIL IMPORTS



Source: National Energy Board

Imports jumped almost 25%, to $73 \times 10^3 \text{m}^3/\text{d}$, in the fourth quarter mainly due to imports to Newfoundland. The composition of imports in the fourth quarter was quite different from the earlier part of the year. Deliveries of North Sea crude fell $6 \times 10^3 \text{m}^3/\text{d}$, while both the United States and Mexico were down by about $1 \times 10^3 \text{m}^3/\text{d}$ each, to $2.4 \times 10^3 \text{m}^3/\text{d}$ and $1.5 \times 10^3 \text{m}^3/\text{d}$, respectively. The drop from these countries was more than offset by additional receipts of $10 \times 10^3 \text{m}^3/\text{d}$ from "other Middle East" countries.

CRUDE OIL IMPORTS BY REGION



Source: National Energy Board

10. ENERGY TRADE BALANCE

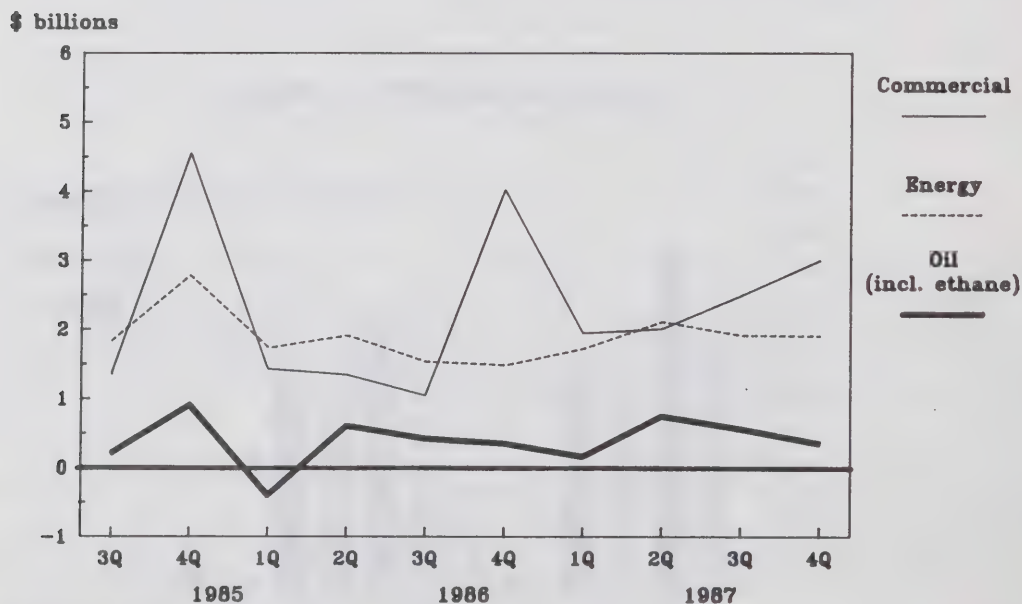
10.1 International

As a result of an increase in product imports, and lower oil prices, (see Petroleum Product Trade), the oil (crude oil and petroleum products) trade surplus fell \$200 million, to \$350 million in the fourth quarter of 1987, from the third quarter. (However it was unchanged from the fourth quarter of 1986.) On an annual basis, the surplus was more than \$1.7 billion, compared with \$1 billion in 1986, and \$3.1 billion in 1985. Most of the fluctuation over these years is attributable to the decline, and then partial recovery, in crude oil prices. An increase in product imports, commensurate with the decline in oil prices in early 1986, also has had a negative affect on the oil surplus.

With respect to energy trade, on a year-over-year basis, the fourth quarter surplus rose \$400 million, to \$1.9 billion primarily because of improved trade in natural gas and uranium. The annual surplus also improved, by \$1 billion, to \$7.7 billion with 80% of the increase attributable to a doubling of the crude oil surplus, to almost \$1.7 billion. Most of this increase reflects higher crude prices in 1987, as the quantity of net crude exports rose only 5%.

As has been the case in previous years, of the seven energy commodity groups, the natural gas surplus was the highest at \$2.5 billion, followed by crude oil at \$1.7 billion, electricity at \$1.2 billion, and coal and uranium at \$0.9 billion each.

OIL AND ENERGY TRADE BALANCE



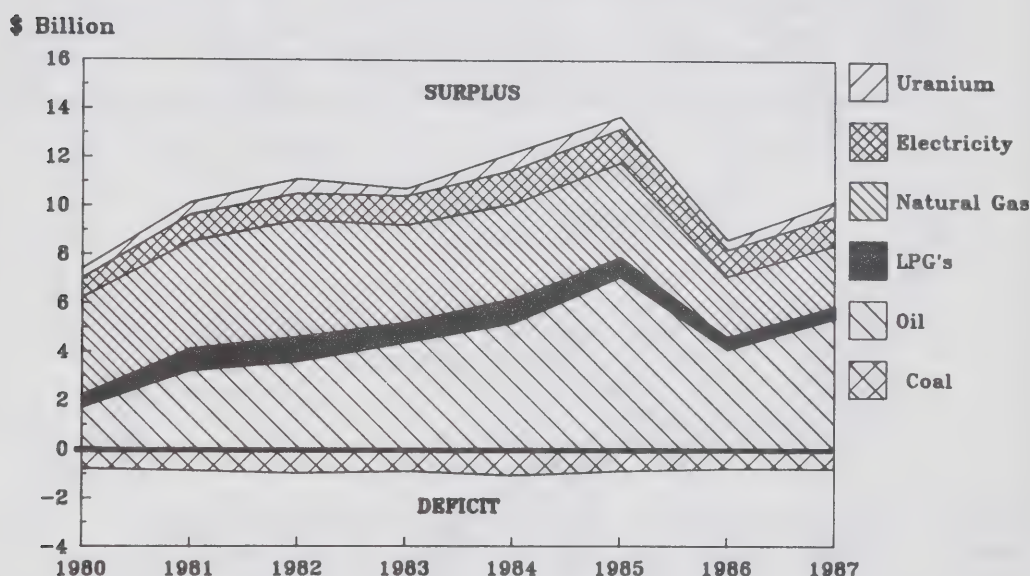
Source: Statistics Canada

10.2 United States

The energy trade surplus with United States rebounded to \$9.3 billion in 1987, up from \$7.7 billion in 1986, but still below the record level of almost \$13 billion in 1985. Virtually all the improvement was recorded in the crude oil and oil products category, which rose \$1.3 billion to \$5.4 billion. The natural gas balance remained unchanged at \$2.5 billion, despite a one third increase in volume exported. A natural gas price decline, also of about one third, nullified the volumetric gain.

Since the early 1980s, the largest growth (on both a price and volume basis) has occurred in the oil category, with most other commodities increasing only marginally. The natural gas surplus has declined by almost 50% over the five years, reflecting both lower prices and, until 1987, reduced volumes. Trade in coal is the only area where Canada has a deficit with the United States. The deficit has been at about \$1 billion for most of this decade.

NET ENERGY COMMODITY TRADE WITH THE U.S.



Source: Statistics Canada

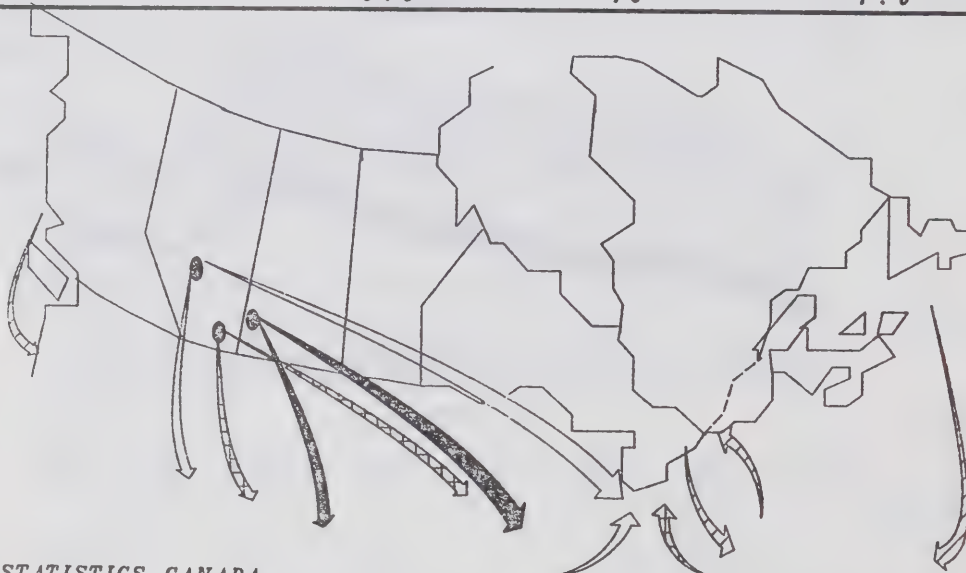
The crude oil surplus increased by \$1.2 billion in 1987, to \$4.7 billion, primarily due to the increase in crude oil prices (the volume of exports was up less than 10%). The volume of both heavy and light crude exports increased about the same amount. The value of net exports of heavy crude to the U.S. (Canada did not import any U.S. heavy crude) jumped 30% to \$2.5 billion in 1987. Light crude exports, at \$2.3 billion were up 27%, while the value of imports declined by about \$80 million to \$140 million, for a net surplus of \$2.2 billion.

With respect to trade in refined petroleum products, the surplus increased \$100 million, to \$700 million, as the rise in exports was greater than the increase in imports. The LPG surplus remained unchanged at \$500 million.

CANADA / U.S. OIL TRADE

GROSS VALUES 1987

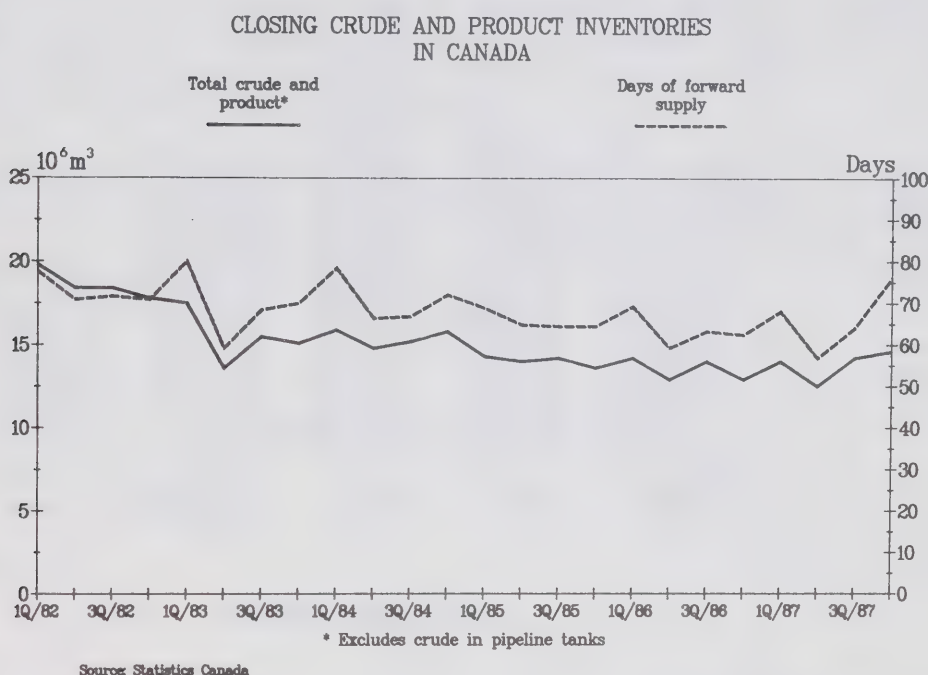
	EXPORTS \$ Billions	EXPORTS % OF PRODUCTION	IMPORTS \$ Billions
□ LIGHT CRUDE	2.3	23	0.1
■ HEAVY CRUDE	2.5	76	--
▨ PRODUCTS	1.4	9	0.7
▧ LPG's	0.7	35	0.2
	6.9	40	1.0



SOURCE: STATISTICS CANADA

11. STOCKS

Following two consecutive years of declines, total crude and petroleum product stocks increased 12% in 1987. Product stocks were up 13% from 1986 levels, to 12 million cubic metres, while crude stocks were 10% higher at 2.5 million cubic metres. On the crude side, all of the increase was in the Atlantic region where stocks were 40% higher than a year earlier, in part, because of the reactivation of the Come-by-Chance refinery. Crude inventories were down in all other regions, with the largest drops in Ontario and the Prairies (15%).



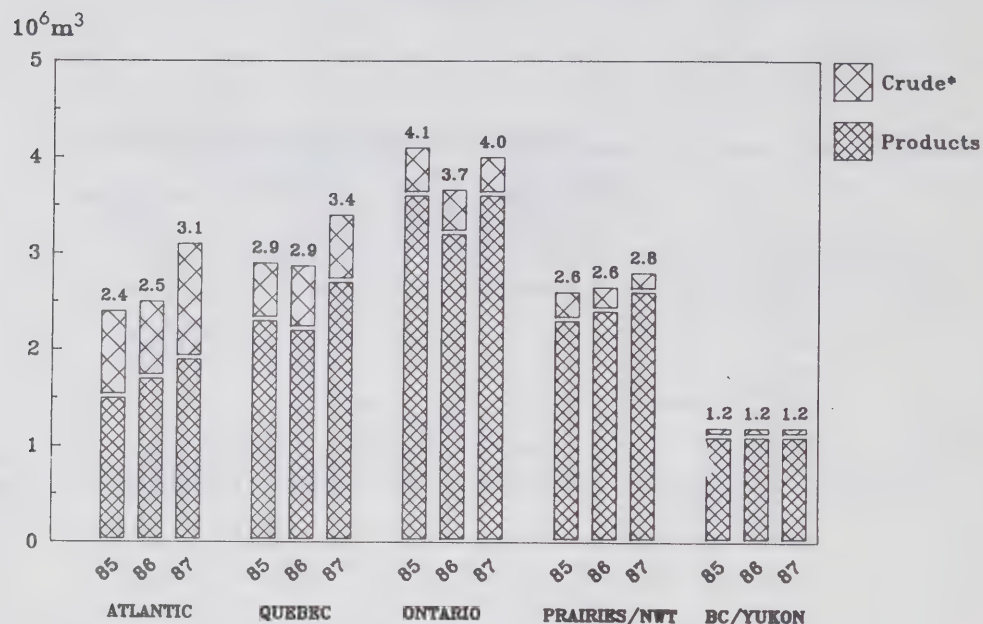
In contrast, all regions had larger product inventories at year-end with increases ranging from 5% in the Prairies to 24% in Quebec. Over a third of the product stock increase was in heavy fuel oil, which nearly doubled to almost 1 million cubic metres. Motor gasoline and diesel fuel stocks were also higher.

About half of the stock build occurred in the fourth quarter when product inventories were built about $6.5 \times 10^3 \text{ m}^3/\text{d}$. The build was in contrast to a draw which usually takes place in the fourth quarter and, to a major extent, reflected the opportunity to purchase U.S. products at attractive prices (see Product Trade).

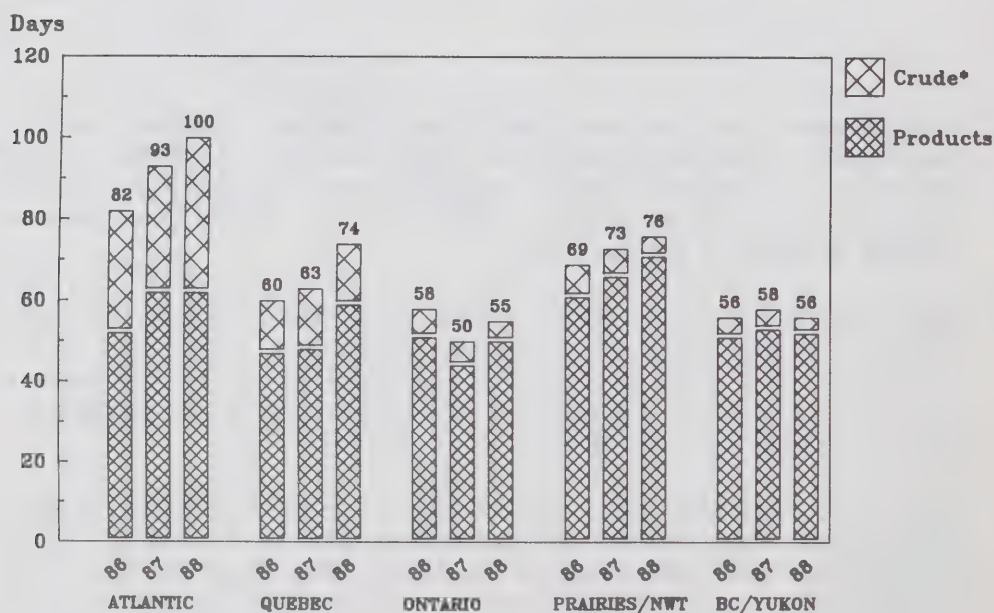
After normalizing for shifts in consumption, the number of days of supply was also higher, up more than 12% to 71 days. While the Atlantic maintained its position of holding the highest level of inventories relative to consumption in the country (100 days), Quebec showed the largest increase, up over 17%, to 74 days, reflecting the high level of product imports in the fourth quarter.

It should be noted that these stocks do not include crude oil in pipeline tankage. If that oil were to be included in stocks (as is done by the International Energy Agency (IEA)), the ratio of stocks to consumption would rise by roughly 8 days, to 79. This compares to the IEA average of 72 days for private stocks. (Including public stocks, the IEA average rises to 99 days.)

CLOSING INVENTORIES DECEMBER



DAYS OF SUPPLY



Source: Statistics Canada

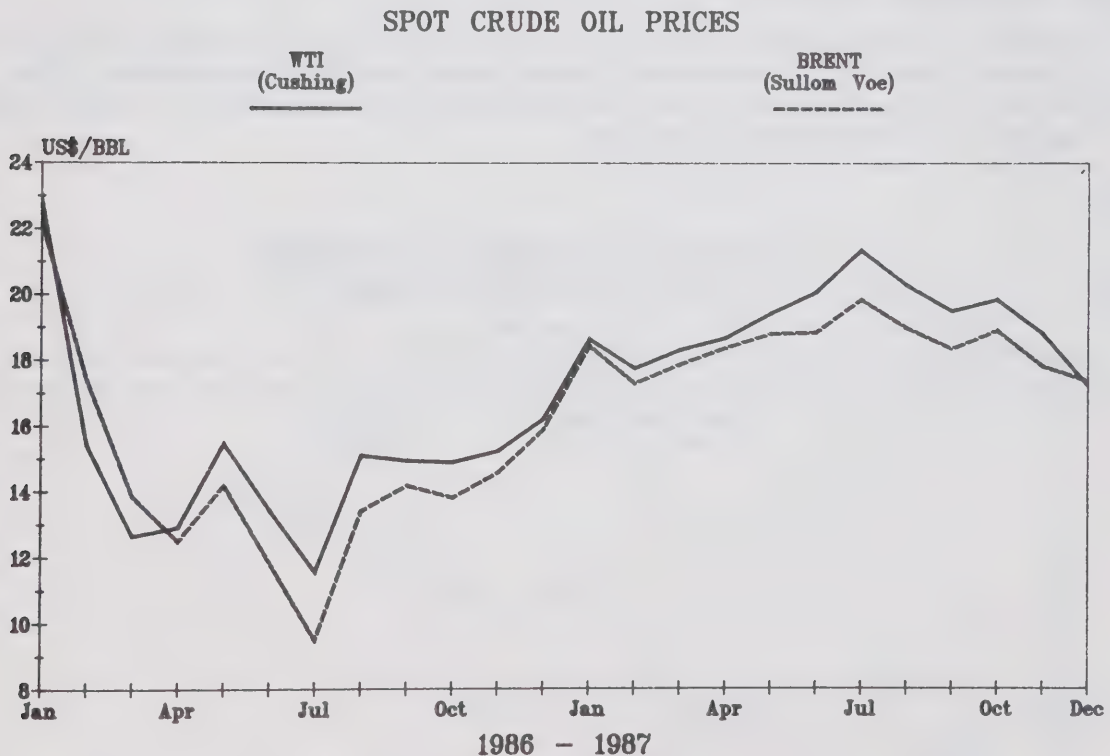
12. PRICES

12.1 International Crude Oil Prices - 1987 Review

Reflecting OPEC's December 1986 decision to return to a fixed price system, based on a reference price of US \$18/bbl, and the continuation of crude oil production controls, spot West Texas Intermediate reached US \$19/bbl in January 1987. After a small decline in February, spot crude prices rose steadily to the US \$18 to \$19/bbl range over the March to May period as OPEC members adhered strictly to their production quotas and the US \$18/bbl reference price.

Spot crude prices reacted strongly to OPEC's June decision to introduce a tighter production ceiling for the second half of 1987. As a result, spot crude prices jumped immediately above the US \$20/bbl mark. This was seen by some experts as a move to pave the way for an increase in OPEC's reference price to US \$20/bbl by year-end.

Rising tension in the Persian Gulf, which led to increased United States involvement in the region, also contributed to the run-up in spot crude prices in the summer. The situation reached a climax in July following the riots in Mecca, with West Texas Intermediate peaking at US \$22.45/bbl, and Brent at US \$20.65/bbl.



Source: London Oil Report

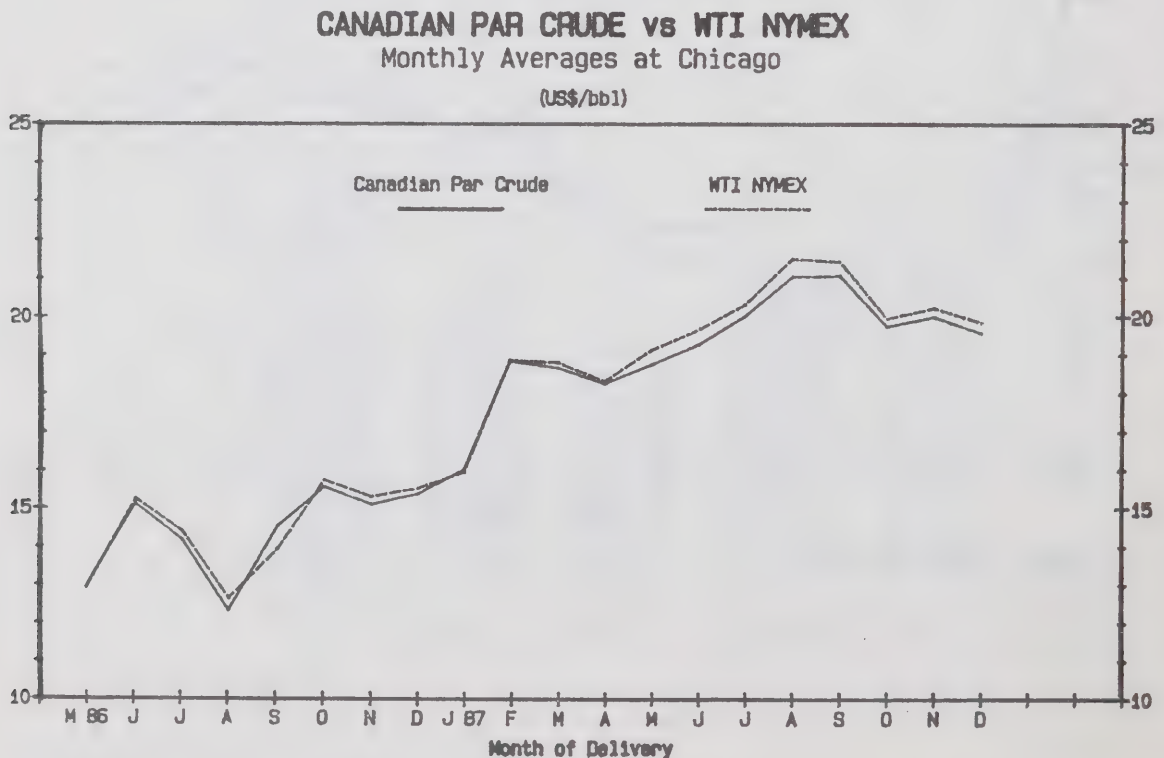
The rise in spot crude prices encouraged oil companies to increase their liftings of OPEC crude oil at official prices. It was evident that officially-priced OPEC crude oil in July and August was a bargain (some US \$2 to US \$3/bbl below spot). However, reports of OPEC overproduction, of about 3 MMB/D during August precipitated a sharp fall in spot crude prices to between US \$18-\$19/bbl. Prices remained in this range over September and October because of OPEC's inability to maintain production discipline.

By end-November, it was apparent that OPEC crude oil production was not declining and was considerably higher than its quota. The growing accumulation of crude and oil product stocks, particularly stocks at sea, continued to depress crude oil prices through November and into December. Spot West Texas Intermediate remained in the US \$18/bbl range.

At its semi-annual ministerial conference in December 1987, OPEC only managed a roll-over agreement which maintains the existing production quotas (excluding Iraq) and the US \$18/bbl reference price. The spot market immediately reflected traders doubts about OPEC's ability to regain control of the market and both WTI and Brent spot prices dipped as low as US \$15/bbl during the week following the meeting. Spot crude prices, however, recovered somewhat, closing the year in the US \$17/bbl range.

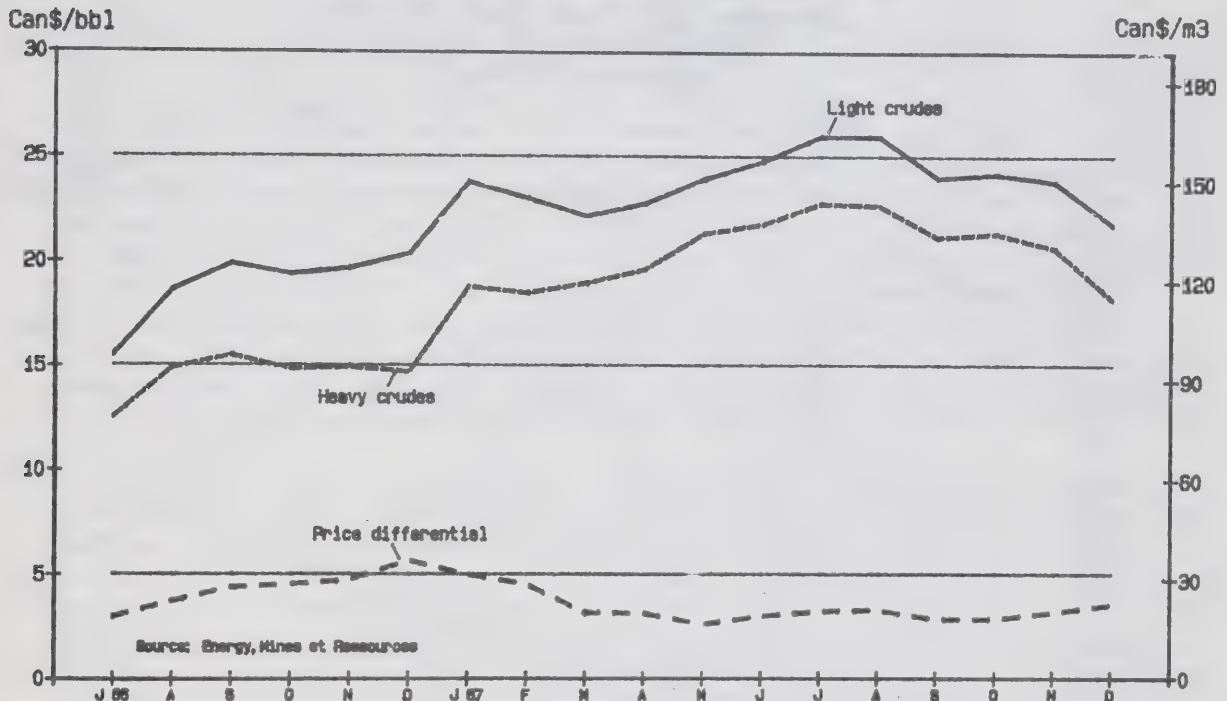
12.2 Canadian Crude Oil Prices

Canadian light crude oil prices closely tracked international crudes, primarily the U.S. benchmark, West Texas Intermediate (WTI). The graph below illustrates the price relationship between those crudes, based on the month of delivery at Chicago.



The graph below compares actual prices for Alberta light and heavy crude oil, purchased for use in Canada at main trunk line injection stations. On average, light crude oil quality during the fourth quarter 1987 was 37.9° API, 0.40% sulphur and heavy crude was 23.8° API, 2.74% sulphur. The variation in the price differential shown at the bottom of the graph is largely explained by the influence of seasonal demand factors i.e. demand for asphalt manufacture in the summer.

Comparison of Domestic Light and Heavy Crudes Actual Purchase Prices (Alberta)



As expected, the differential between Canadian light and heavy crude prices at end of the fourth quarter was about \$3.60 per barrel, much larger than the second or third quarter differential when heavy crude was in demand for asphalt production.

12.3 Light Crude Oil Values: Export Versus Domestic

12.4 Product Prices

Retail prices of regular leaded gasoline increased only marginally during the fourth quarter of 1987 (by about 0.4 cents per litre - see Annex VII), continuing a trend which started in November 1986. While year-over-year prices increased by 7.2 cents per litre, or 17.5%, combined federal and provincial consumption taxes accounted for 3.4 cents of the increase, and crude costs about 2.8 cents. December 1987 prices, however, remained 4.3 cents per litre or 8% below the January 1986 level.

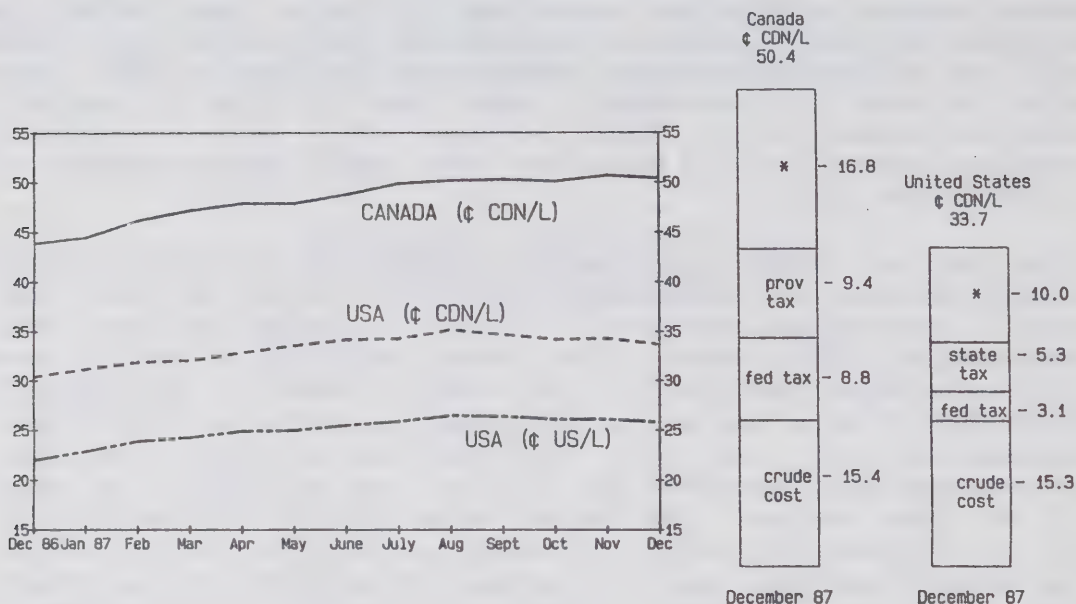
Retail diesel prices were generally stable in the fourth quarter, although the annual increase averaged 3.0 cents per litre. In keeping with the pattern that existed when prices declined in 1986, the diesel price increase was considerably less than the rise in regular leaded gasoline prices during 1987. During 1986, average regular leaded gasoline prices fell 11.5 cents per litre, while diesel declines averaged 4.8 cents per litre.

There were no significant changes to federal or provincial gasoline and diesel consumption taxes during the fourth quarter of 1987 (see Annex VIII). Four of the provinces, all with ad valorem tax rates, made minor adjustments to their taxes. The federal sales tax on regular leaded and regular unleaded gasolines did not change, however it was increased 0.01 cents per litre on premium unleaded gasoline, while on diesel fuel it was reduced 0.07 cents per litre. Combined federal taxes on regular leaded in December 1987 accounted for 18.2% of the pump price, as compared to 17.7% a year earlier. The federal sales tax on gasoline is based on a 12% ad valorem rate and is adjusted quarterly to reflect changes in a twelve-month average industrial product price index for gasoline, with a one-quarter lag. Gradual increases in gasoline prices since November 1986 are likely to cause slight federal sales tax increases during 1988.

In December 1987, residential furnace oil prices in the Atlantic provinces were about the same as at the end of 1986 (see Annex IX). Only in Nova Scotia did prices fluctuate during 1987, however, these were due to two Public Utilities Board decisions - a price rollback in April and approval of a price increase in October. In Quebec, prices increased gradually during the year, while in Ontario most of the 20% average price increase took place during the first quarter of 1987. In the heating season to December 1987, price increases in the Atlantic provinces and central Canada ranged from 0.0 to 2.4 cents per litre.

The following line graph and bar charts compares the average gasoline price in Canada and the United States. The Canada line represents a major-centre weighted average gasoline price of all three grades of gasoline (regular leaded, regular unleaded and premium unleaded) sold at both full-serve and self-serve stations. The U.S. lines represent the U.S. city average retail price for all grades of gasoline, at both full-serve and self-serve stations, expressed in both Canada and U.S. cents per litre.

Canada vs U.S. - Motor Gasoline Average Retail Price - All Grades Average Full-Serve & Self-Serve



* Refining and Marketing Costs and Profits

The bar charts illustrate the components of the average pump price in each country using December 1987 data. Crude costs are the average refinery acquisition costs (cost of crude received at the refinery gate) lagged by 60 days in Canada and 45 days in the United States. The refining and marketing costs and profits component is the residual revenue available to cover refining, marketing and distribution costs and to provide a return to the industry on its investment.

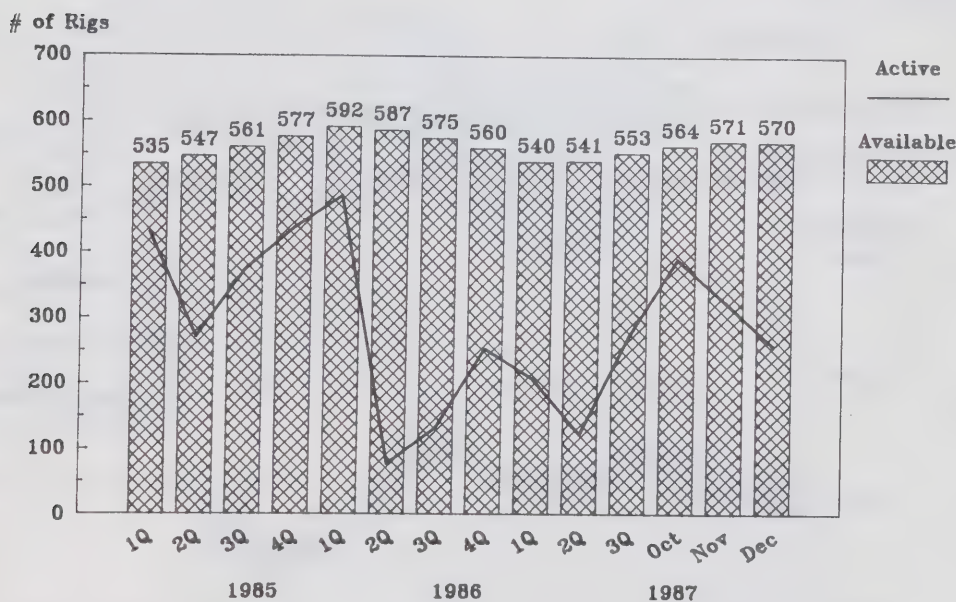
Gasoline prices in Canada in December 1987, were 16.7 cents per litre higher than in the United States. This reflects a widening in the differential during the last quarter of 1.1 cents per litre, which was attributable to an increase in the refining and marketing costs and profits component in Canada. Almost two-third of the differential in December was accounted for by higher taxes in Canada (9.8 cents per litre). The larger refining and marketing costs and profit component in Canada results from structural differences between the two markets e.g. economies of scale in refining, distribution and retailing facilities favour U.S. refiners and marketers.

13. DRILLING RIG ACTIVITY

With the help of various grants, royalty holidays and a more stable crude oil market, the drilling industry managed to keep an average of 42% of the available drilling rigs active during 1987. This is the same percentage as in 1986, but more than a third less than the 68% utilization rate in 1985. It should be noted however that, except for the first quarter, rig use was greater in 1987 than in 1986. During the past year, the total number of available rigs was down to an average of 551, 26 less than in 1986.

In the fourth quarter of 1987 an average of 324 rigs were active, for a utilisation rate of 57%, while only 46% were active in the same quarter a year earlier, although the usage was not constant from month to month. With the Alberta royalty holiday being eliminated in October and the softening of crude prices at the same time, rig utilization dropped off in the last part of the year to 43% by mid-December, from a 1987 high of 73% (414 rigs) at the beginning of the quarter.

CANADIAN RIG ACTIVITY



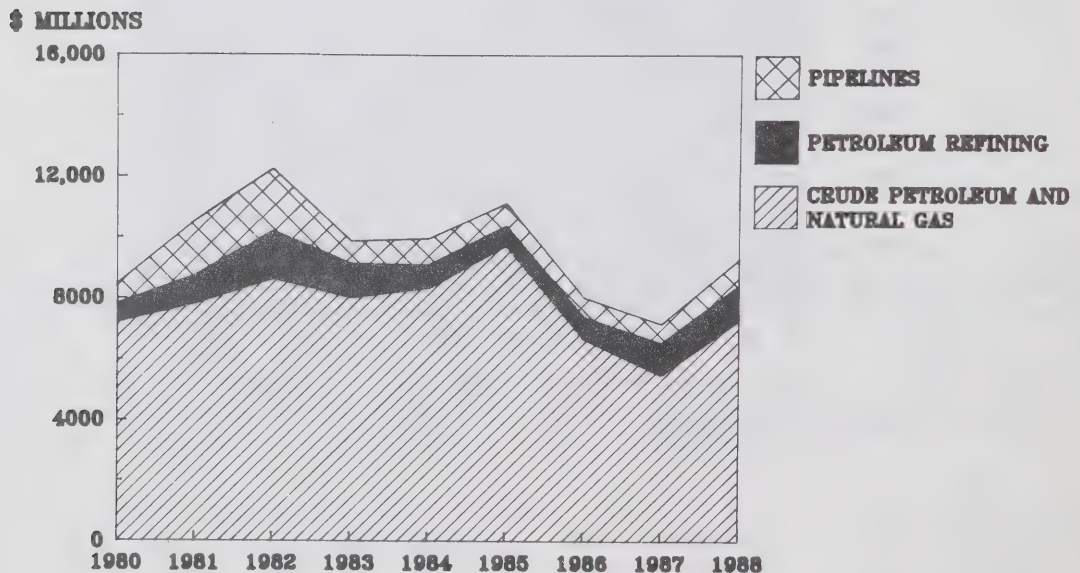
Source: Energy, Mines and Resources

14. CAPITAL EXPENDITURES

Based upon an end-year survey* of capital expenditures, the upstream oil industry invested about \$5.5 billion in 1987, down almost 18% from 1986. This level represents the lowest level of capital expenditures by the industry this decade, down more than 30% from the average of the preceeding seven years (unadjusted for inflation). The outlook for 1988 is considerably improved, however, yielding an increase of 33 percent to \$7.3 billion which is still somewhat below levels of activity achieved earlier in the decade. Capital expenditures in non-conventional crude oil, largely bitumen projects, are expected to almost double from the 1987 level but will represent less than 16 percent of total upstream capital expenditures.

Capital expenditures in the petroleum refining industry rose sharply (47 percent) in 1987 to over \$1 billion. In 1988, this level of activity is expected to rise marginally to \$1.1 billion as companies continue to improve and refurbish their refining installations to meet higher quality and environmental standards. Expenditures on pipelines declined marginally to \$0.6 billion in 1987 as Interprovincial Pipeline completed Phase III of its expansion and debottlenecking plan, but are expected to rise to \$0.9 billion (up 39%) in 1988. At the beginning of 1988, all major oil pipelines out of Alberta were running at or near capacity levels.

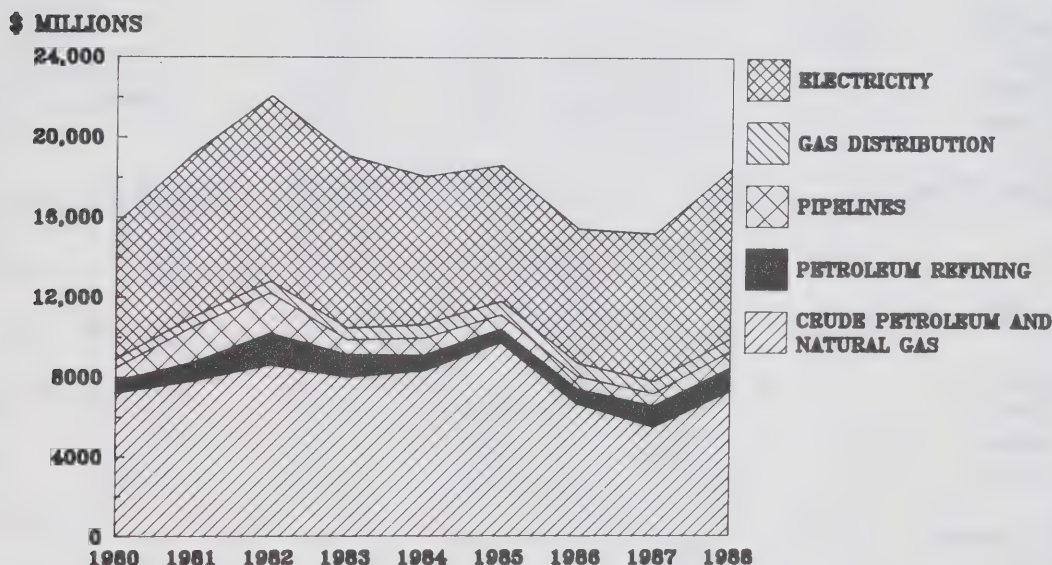
CAPITAL EXPENDITURES IN THE PETROLEUM INDUSTRY



Overall energy capital expenditures remained relatively flat in 1987 at just over \$15 billion despite the drop in upstream petroleum expenditures. In 1988, total energy is expected to rebound sharply, up almost 22 percent to \$18.5 billion.

Since 1984, capital expenditures in the total economy have risen at roughly 10 percent annually to reach an expected level of \$150 billion in 1988. By contrast, capital expenditures in energy have portrayed much more volatility over this period with petroleum evidently contributing significantly to the annual fluctuations. By 1988, despite the jump of 30 percent over the prior year, petroleum capital expenditures amounted to just over 6 percent of the total economy, down from 10 percent in 1984.

TOTAL* ENERGY CAPITAL EXPENDITURES



* Excluding coal and uranium mining

APPENDIX I
AVAILABLE SUPPLY OF
CANADIAN CRUDE OIL AND EQUIVALENT

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988(e)</u>
	----- (10 ³ m ³ /d) -----				
I <u>PRODUCTION</u>					
<u>Light/Medium and</u> <u>Equivalent Crudes</u>					
Alberta	146.6	138.2	126.1	129.8	135.5
B.C.	5.8	5.4	5.5	5.7	5.4
Saskatchewan	9.1	10.2	11.0	10.7	10.8
Manitoba	2.1	2.2	2.2	2.1	2.0
Other	0.6	2.9	3.9	4.2	4.6
	164.2	158.9	148.7	152.5	158.3
<u>Synthetic</u>					
Suncor	7.6	5.8	8.7	6.9	7.5
Syncrude	13.5	20.3	20.5	21.7	21.9
Total	21.1	26.1	29.2	28.8	29.4 (2)
<u>Pentanes Plus *</u>	8.7	9.9	7.7	5.7	5.5
Total	194.0	194.9	185.6	186.8	193.2
<u>Heavy Crude Oil</u>					
<u>Alberta</u>					
Crude	22.5	26.3	33.0	39.1	41.8
Diluent	3.1	4.4	6.9	7.7	9.5
Total	25.6	30.7	40.9	46.8	51.3
<u>Saskatchewan</u>					
Crude	20.3	21.2	20.6	21.9	22.5 (2)
Diluent	3.3	3.0	2.7	3.0	3.0
Total	23.6	24.2	23.3	24.9	25.5
Total	49.2	54.9	64.2	71.7	76.8
<u>Shut-in</u>					
Light/Medium	1.0	9.8	15.0	7.2	0.4
Heavy	-	2.3	4.1	1.7	0.0
II <u>TOTAL PRODUCTIVE</u> <u>CAPACITY (1)</u>	243.2	249.8	248.8	258.6	270.0

Source: National Energy Board

(1) including actual synthetic production

(2) not adjusted for NewGrade upgrader synthetic production

* excludes diluent

APPENDIX II
DISPOSITION OF CANADIAN CRUDE OIL

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	-----10 ³ m ³ /d-----			
I <u>Light/Medium and Equivalent</u>				
<u>Supply</u>				
Production	194.0	194.9	185.6	186.8
Inventory (Draw)/Build	0.2	2.0	0.4	(0.2)
Total	<u>193.8</u>	<u>192.9</u>	<u>185.2</u>	<u>187.0</u>
<u>Demand</u>				
Atlantic	8.7	2.3	0.0	0.0
Quebec	29.1	21.5	13.2	10.5
Ontario	71.9	67.6	62.4	61.0
Prairies	48.5	48.5	48.1	51.0
B.C.	22.4	22.6	20.8	21.0
Total Domestic	<u>180.6</u>	<u>159.6</u>	<u>144.5</u>	<u>143.5</u>
<u>Exports</u>	13.2	33.3	42.3	43.7
Total Demand	<u>193.8</u>	<u>192.9</u>	<u>185.2</u>	<u>187.0</u>
II <u>Heavy Crude</u>				
<u>Supply</u>				
Production	49.2	54.9	63.2	71.8
Pipeline (Draw)/Build	(0.4)	(1.7)	(4.5)	(2.7)
Total	<u>49.6</u>	<u>56.6</u>	<u>67.8</u>	<u>75.1</u>
<u>Demand</u>				
Atlantic	0.2	0.2	0.3	0.4
Quebec	2.1	1.6	2.4	2.8
Ontario	7.3	8.5	8.3	10.5
Prairies	3.9	4.7	4.5	4.5
B.C.	0.0	0.0	0.0	0.2
Total Domestic	<u>13.5</u>	<u>15.0</u>	<u>15.5</u>	<u>18.4</u>
<u>Exports</u>	<u>36.1</u>	<u>41.6</u>	<u>52.3</u>	<u>56.7</u>
Total Demand	49.6	56.6	67.8	75.4

APPENDIX III
LIGHT AND HEAVY CRUDE OIL EXPORTS BY DESTINATIONS

<u>Destination</u>	<u>Light</u>		<u>Heavy</u>	
	<u>1986</u>	<u>1987</u>	<u>1986</u>	<u>1987</u>
Washington State	3.8	1.8	0.1	0.4
Montana	5.8	7.4	4.2	3.3
Minnesota	1.5	3.1	23.6	23.9
Illinois/Indiana	12.1	18.8	20.8	24.3
Ohio	9.4	5.8	0	0
Pennsylvania/New York	7.4	7.0	1.6	1.6
Other U.S.	1.1	0	1.0	0.8
Offshore	0.1	0.3	0.4	0.3
Total Exports	41.2	44.2	51.7	54.6

Source: National Energy Board

APPENDIX IV
IMPORTS BY COUNTRIES

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	<u>-----10³m³/d-----</u>			
Venezuela	11.7	10.8	6.8	5.7
Mexico	7.5	0	2.9	2.6
West Africa	1.6	2.5	7.7	7.7
North Africa	4.7	4.6	1.2	1.2
Iran	1.3	1.7	4.8	3.4
Saudi Arabia	0	0	2.5	2.8
Other Middle East	0.2	0.1	0	3.8
North Sea	4.5	16.4	26.3	33.9
U.S.A.	0.5	0.8	3.7	3.3
Others	1.3	5.1	0.7	0.5
Total Imports	33.3	42.0	56.6	64.7

Source: Statistics Canada
64h/1241h

APPENDIX V
CANADIAN PETROLEUM PRODUCT SALES

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	-----10 ³ m ³ /d-----			
Motor Gasoline	89.9	89.3	90.3	91.0
Light Fuel Oil	24.0	27.2	27.4	19.3
Diesel	40.4	43.2	42.0	43.1
Heavy Fuel Oil	19.7	18.7	20.5	19.1
Other	40.0	40.8	43.3	47.3
Total Net Sales	<u>214.0</u>	<u>219.2</u>	<u>223.5</u>	<u>219.9</u>

APPENDIX VI
CRUDE AND PRODUCT INVENTORIES
Closing December

	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
	-----10 ⁶ m ³ -----			
<u>Crude</u>				
Atlantic	0.7	0.9	0.8	1.2
Quebec	0.9	0.6	0.7	0.7
Ontario	0.6	0.5	0.5	0.4
Prairies	0.3	0.3	0.3	0.2
British Columbia	0.1	0.1	0.1	1.0
Total Canada	<u>2.6</u>	<u>2.4</u>	<u>2.4</u>	<u>3.5</u>
<u>Products</u>				
Atlantic	1.8	1.5	1.7	1.9
Quebec	3.4	2.3	2.2	2.7
Ontario	3.9	3.6	3.2	3.6
Prairies	2.9	2.6	2.4	2.6
British Columbia	1.2	1.1	1.1	1.2
Total Canada	<u>13.2</u>	<u>11.1</u>	<u>10.6</u>	<u>12.0</u>

Source: Statistics Canada

APPENDIX VII
AVERAGE REGULAR LEADED GASOLINE PRICES
FULL-SERVE AND SELF-SERVE
1986-1987

	1986 Dec.	1987 March	1987 June	1987 Sept.	1987 Dec.	Change Last 12 months
	(cents per litre)					(%)
St. John's (Nfld.)	50.6	53.1	52.9	52.6	52.6	4.0
Charlottetown	49.2	51.3	51.8	51.8	51.8	5.3
Halifax	48.7	50.9	47.7	47.4	50.0	2.7
Saint John (N.B.)	44.4	44.8	45.9	45.8	47.8	7.7
Montreal	48.9	52.6	53.5	54.1	54.2	10.8
Ottawa	43.2	47.1	47.7	48.8	48.6	12.5
Toronto	40.4	42.8	44.6	47.5	46.3	14.6
Winnipeg	45.4	47.1	47.0	47.1	46.7	2.9
Regina	29.0	40.7	40.1	44.5	48.2	66.2
Calgary	36.3	39.0	43.9	41.7	44.9	23.7
Vancouver	<u>41.0</u>	<u>46.1</u>	<u>50.3</u>	<u>52.7</u>	<u>51.2</u>	<u>24.9</u>
Canadian average	41.2	44.6	46.7	48.0	48.4	17.5
Consumption taxes included:						
- Federal	7.3	9.0	9.1	8.8	8.8	20.5
- Provincial	7.2	6.8	8.4	9.1	9.1	26.4

Source: Statistics Canada

APPENDIX VIII
CONSUMPTION TAXES ON PETROLEUM PRODUCTS
December 1, 1987

	Ad valorem		Gasoline			
	Mogas	Diesel	Reg L	Reg UL	Prem UL.	Diesel
	(%)		(cents per litre)			
<u>Federal Taxes</u>						
Sales			3.29	3.29	3.38*	2.62*
Excise			5.5	5.5	5.5	4.0
<u>Provincial Taxes</u>						
Newfoundland	22	26	9.8	9.8	9.8	12.1
Prince Edward Island	20	23	8.9	8.9	8.9	10.4*
Nova Scotia	20	21	8.7*	8.7*	8.7*	9.1*
New Brunswick	20	23	7.6*	8.1*	8.5*	8.1*
Quebec (a)	—	—	14.4	14.4	14.4	12.45
Ontario	—	—	8.3	8.3	8.3	9.9
Manitoba	—	—	8.9	8.0	8.0	9.9
Saskatchewan	—	—	7.0	7.0	7.0	7.0
Alberta	—	—	5.0	5.0	5.0	5.0
British Columbia	20(b)	20(b)	9.64*	7.64*	7.64*	8.08*
Yukon	—	—	4.2	4.2	4.2	5.2
Northwest Territories	17	(c)	8.7	8.7	8.7	7.4

(a) Reduced by varying amounts in certain remote areas and within 20 kilometres of the provincial and U.S. borders.

(b) Additional transit tax of 2.5c per litre in Vancouver.

(c) 85% of gasoline tax.

* Changed since last quarter.

Source: Statistics Canada

APPENDIX IX
Residential Furnace Oil Prices
1986-1987

	Dec. 1986	Apr. 1987	Sept. 1987	Dec. 1987	Change last 12 months
	(Canadian cents per litre)				(%)
St. John's (Nfld.)	32.3	32.4	32.4	32.4	0.3
Charlottetown	32.3	32.3	32.3	32.3	0.0
Halifax	29.9	28.7	27.4	29.6	1.0
Saint John (N.B.)	33.0	33.0	33.0	33.0	0.0
Quebec City*	26.9	28.9	29.1	31.5	17.1
Montreal*	25.0	28.0	29.5	30.0	20.0
Ottawa	27.5	31.5	31.5	32.9	19.6
Toronto	26.6	31.2	31.4	32.4	21.8

* includes 9% provincial sales tax

Source - Statistics Canada

Glossary

Bitumen	A naturally occurring viscous mixture composed mainly of hydrocarbons heavier than pentane, which may contain sulphur compounds and which in its natural state is not recoverable at a commercial rate through a well.
Conventional areas	Those areas of Canada that have a long history of hydrocarbon production. Conventional areas are also referred to as nonfrontier areas.
Crude oil and equivalent	Includes crude oil, synthetic crude oil produced from oil sands plants, and condensate.
Feedstock	Raw material supplied to a refinery or petrochemical plant.
Heavy crude oil	Loosely applied, crude oils with a low API gravity (high density).
In situ recovery	With reference to oil sands deposits, the use of techniques to recover bitumen without the necessity of mining the sands.
Light crude oil	Crude oil with a high API gravity (low density). Generally includes all crude oil and equivalent hydrocarbons not included under heavy crude oil.
Natural gas liquids	Those hydrocarbon components recovered from raw natural gas as liquids by processing through extraction plants, or recovered from field separators, scrubbers or other gathering facilities. Includes the hydrocarbon components ethane, propane, butane and pentanes plus, or a combination thereof.
Oil sands	Deposits of sand and other rock aggregate that contain bitumen.
Pentanes plus	Also referred to as condensate. A volatile hydrocarbon liquid composed primarily of pentanes and heavier hydrocarbons. Generally a byproduct obtained from the production and processing of natural gas.

Glossary (continued)

Productive capacity	Also referred to as producibility. The estimated production level that could be achieved, unrestricted by demand, but restricted by reservoir performance, well density and well capacity, oil sands mining capacity, field processing and pipeline capacity.
Shut-in capacity	The unused production capability of currently producing oil and gas wells plus the total production capability of all shut-in oil and gas wells, whether or not they are connected to surface gathering and producing facilities.
Sustained Capacity	The effective capacity of production after adjustment are made for planned maintenance downtime. Different from design capacity which is capacity with no downtime.
Synthetic crude oil	Crude oil produced through treatment of oil sands in upgrading facilities designed to reduce the viscosity and sulphur content.

